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As one of its major activities in carrying out its purpose, the Society publishes a monthly magazine, the Canadian Geographical Journal, which is devoted to every phase of geography—historical, physical and economic—first of Canada, then of the British Empire and of the other parts of the world in which Canada has special interest. It is the intention to publish articles in this magazine that will be popular in character, easily read, well illustrated and educational to the young, as well as informative to the adult.

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The Society has no political or other sectional associations, and is responsible only to its members. All money received is used in producing the Canadian Geographical Journal and in carrying on such other activities for the advancement of geographical knowledge as funds of the Society may permit.

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Photo by Dr. L. G. Saunders, University of Saskatchewan

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The wheat fields near Regina. Tractor-drawn swathers and combines at work on the harvest.

S.F.B. photos

Saskatchewan[*]

by JIM WRIGHT

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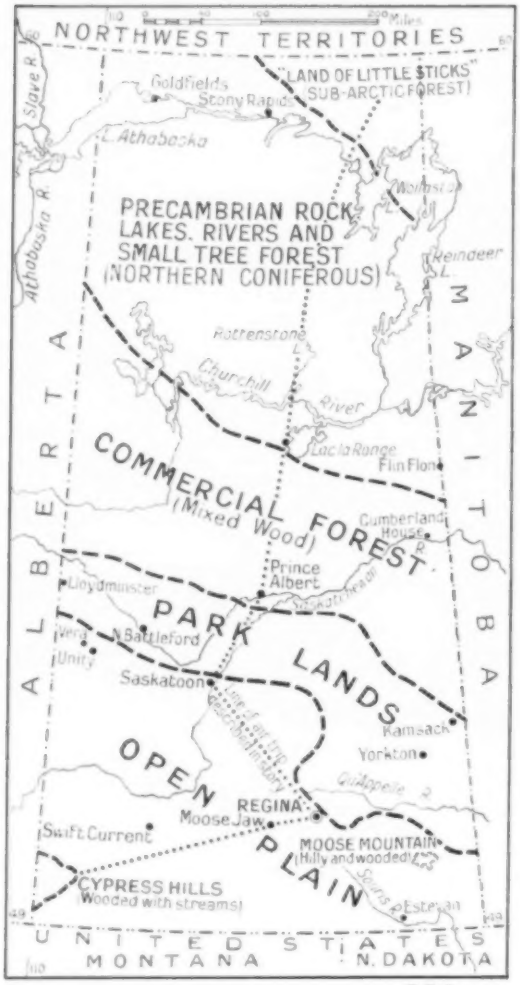
THE POLITICAL (governmental) boundaries of the Province of Saskatchewan, are unrelated to the varied geography of Saskatchewan's 251,700 square miles. No topographical or geological feature, no river, lake, rock formation or range of hills marks Saskatchewan's boundary-land as distinct from that of the two neighbouring provinces, Manitoba on the east, Alberta to the west.

Along Saskatchewan's southern boundary, North Dakota's grain country and Montana's grazing land so naturally merge with those of Saskatchewan, a roving horseman might not know whether he were in one of the states or in the province, unless he were locally acquainted with topography on both sides of the invisible border that is the 49th parallel, the political demarcation line between western Canada and the United States of America.

Saskatchewan's northern boundary is parallel of latitude 60. This mathematical line of measurement divides the lake, rock, muskeg and bush country of Saskatchewan Province from adjoining and identical lake, rock, muskeg and bush country of Canada's Northwest Territories.

From Saskatchewan's southern to northern boundary is 761 miles. At the southern boundary the province is 393 miles wide; at the northern, 277 miles wide.

Within Saskatchewan are six principal geographical regions roughly indicated on Sketch Map A. These regions, with the exception of Cypress Hills, extend into Manitoba. The sub-Arctic "land of little



C.G.J. map

Sketch map showing principal geographical regions of Saskatchewan

sticks" veers northwest out of Saskatchewan and so misses Alberta. The area of Precambrian rocks, part of the Canadian Shield reaching down into Saskatchewan from the Northwest Territories, extends over Ontario and Quebec.

We should see the distinctive features of the six geographical regions in a day's summer flying from the Cypress Hills at the Alberta boundary in southwestern Saskatchewan, to the northeast corner bordering Manitoba and the Northwest Territories.

On such a trip we see first the small but beautiful region that is Cypress Hills, poplar and spruce clad hillsides with freshwater springs, rainbow and speckled trout in the larger streams. Cypress Hills Provincial Park has an average elevation of 4,300 feet above sea level. This park, like Moose Mountain Provincial Park is an easy automobile drive from the United States boundary and popular with tourists.

Flying in a northeasterly direction, we are soon over the open plain, home of the antelope, northern edge of the once great cattle ranching domain that in 1880 extended south to Texas and the Gulf of Mexico. We fly on toward Moose Jaw, over the land of grain, flat-rimmed coulees, restless winds, treeless save for planted windbreaks around

Moose Jaw (photo is of Main Street), third largest city, was a Plains Indian camping ground when Palliser marked it on his map in 1857. The Moose Jaw of today's commercial distributing centre began in 1882 when the Canadian Pacific Railway in its western construction drive opened southern Saskatchewan to settlement. Legend says Lord Dunsmore here fixed a wheel of his Red River cart with the jaw bone of a moose. There is the story that the Indians long ago called it Moose Jaw—because the curve of the Moose Jaw River is like the jaw of a moose.

Bull photo

The Prairie scene Melville-Ness photo

neat appearing farm-homes; all farmyards look tidy from half-a-mile in the air.

From Moose Jaw (population 25,000) commercial distributing centre and railway division, we follow the Canadian Pacific Railway main line east to Regina, provincial capital (65,000). Regina's white-walled, dark-domed Legislative Building rises amid the green of man-planted trees, hand watered lawns.

Past the western part of Qu'Appelle Valley in the park lands, we fly northwest over more plains region grain country to Saskatoon (50,000). At Saskatoon—Indian name for the prairie blueberry—we look down on the Canadian National's Bessborough Hotel waving its volcano-like plume of smoke; the light-gray locally quarried limestone buildings of the University of Saskatchewan; green lawns; tree-edged, high banked blue water of the South Saskatchewan River winding through the city northeastward toward northern Manitoba, to empty eventually in the saltwater sea that is Hudson Bay.

We refuel and fly north over the park lands region—little bluffs of poplar trees, and willow-surrounded sloughs that in early summer provide kindergarten swimming pools for young wild ducks, and natural hay for the dairy farmer's cows. This too is grain growing country, but the average farm is smaller; here is more mixed farming. Nature-planted trees and rolling land shelter livestock and gardens from the winds; it is farther north, moisture evaporation is less than on the southern open plain.

Prince Albert, fourth city in population (13,000), within the northern limit of the park lands region, is gateway to the commercial forest region and Saskatchewan's north. To Prince Albert you have travelled in a plane equipped with wheels for take-off and landing on regular runways or flat farm fields. At Prince Albert you change to a float equipped plane, and with hissing

Lac la Ronge, at the northern edge of the clay belt and commercial forest region, and southern edge of the Precambrian region. In left lower corner of aerial photo is the Hudson's Bay Company store and fur-trading post; centre shows the Anglican Church and Mission house. Inset at lower right shows aerial view of gravel highway between Waskesiu Lake and Lac la Ronge.
R.C.A.F. photo

steam-like swirl of spray take off from the spruce-rimmed North Saskatchewan River, to fly on north.

Past the marginal park lands and over commercial softwood forest region of spruce, jackpine, poplar, tamarack and a variety of smaller trees, you look down on occasional logging roads. Scattered portable saw-mills have replaced the large stationary mills whose profit-seeking operators once slashed this coniferous forest which, had its timber stands been scientifically conserved, could today be supplying lumber for many unbuilt homes.

Over Emma Lake we look down on roof-tops of summer cottages edging a sandy shore, pleasure canoes on sun-sparkled water. We are soon above Prince Albert National Park, and to the west is Waskesiu Lake, principal summer resort, golfers' Mecca.

At Lac la Ronge we leave behind the most northerly automobile highway and the commercial timber growth characteristic of the clay belt region, as we enter the vastness of Precambrian rocks, lakes, rivers, creeks and muskeg. Here is the country of fur, fish, undiscovered mineral resources, undeveloped water power sites. We still see forest beneath us, but north of the lake-like chain that is the Churchill River, trees become smaller until at the far northeast corner of the province we circle over the sub-Arctic, the land of moss and "little sticks," less than a hundred miles from the summer home of the caribou, the "Barren Lands" (tundra).

In half a long summer's day we have flown over Saskatchewan's north. Not in an entire

summer would a man want to walk his way back; as the area is one-third to one-half water, he would have to travel many extra miles to circle rocky shores of unnamed, uncounted lakes and muskegs. For a canoe the portages are many and rough. A horse's hooves would become worn painfully on relentless rock, the horse would bog down in muskeg; black flies and mosquitoes would pierce his hide, while he would not have enough to eat. The traveller here might meet no other human being. This is the hinterland, in parts potentially rich in minerals, awakening to the whir of the aeroplane.

Winging our way back to southern Saskatchewan let us visualize the plains region as it was before the white man came with his plough. It was then a space of windswept grasses and buffalo—and the white man's horse, that arrived ahead of the white man, took to this prairie as if it had always been his home.

Geologists find this great plain developed on nearly flat-lying clays, shales and sandstones. Glacial invasion scoured the surface, runoff water from the melting ice further shaped the depressions that are the flat-rimmed coulees of today. During arid periods, moisture evaporation equals both rainfall and snowfall. The air is dry, sun strong, the winds persistent, and that is the chief reason why most tree species do not thrive on the open plain where, in normal dry periods, their summer leaves give moisture off more rapidly than their roots can draw it from the drying earth. The narrow-leafed Caragana (Siberian Pea Tree), however, conditioned by similar climate, flourishes through dry periods. The grass family, to which wheat, oats, barley and rye belong, thrives where trees fail.

Just as "rain at the right time" (in June and July) determines success for the farmer's grain crop today, and as the crop varies considerably in different areas during one growing season, so did rainfall—or lack of it—determine nature's prairie grass crop of yesterday. Rain, or its lack, decided the movements of great buffalo herds roaming in search of best feeding ground. Where the buffalo went the plains Indian followed, for meat, and hides for clothing and teepee.

Over Lac la Ronge. Much of northern Saskatchewan's Precambrian region looks like this from the air. Everett Baker photo

Telephone pole at Flin Flon, held erect by rock-filled wooden crib. Alternative is to drill holes for telephone poles; a man with a spade has little effect on the hard rock. Saskatchewan "Wheat Pool" (3) photos

Electric locomotive at Flin Flon, powered from Island Falls on the Churchill River.

Dogs hauled much of the camp load on travois—a frame of poles harnessed to the dog's back—the lower end of the travois dragging on the grass. What the dogs couldn't carry, the Indian women did.

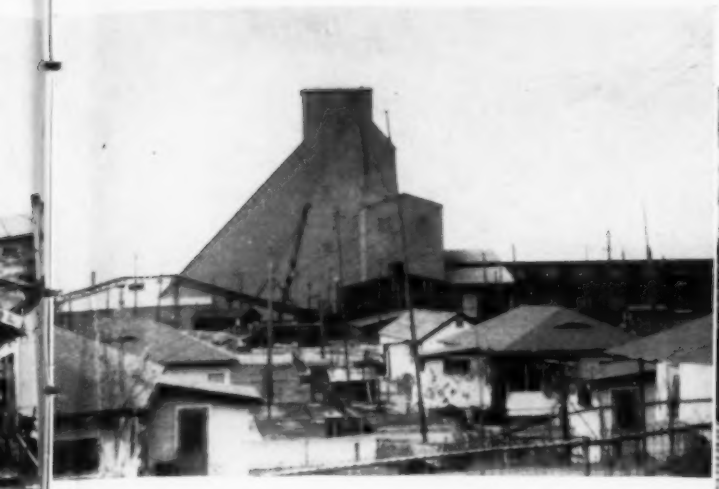
Then came the horse, an advance to make the Indian mobile in tribal warfare, and against the buffalo. Horses of Asiatic-Arabian-Moorish-Spanish ancestry, on which Indians were mounted when Europeans arrived on the western Canadian plains, were strayed, stolen or traded from as far south as the Rio Grande and Mexico. Ahead of the white man too came his gun, and his smallpox.

White, and Metis (mixed European and Indian) buffalo hunters had penetrated southeastern Saskatchewan but did not settle here. In the early 1870's the "wolvers," lawless bands of white men from Montana, crossed into southwestern Saskatchewan trading whiskey with the Indians for buffalo hides and pemmican. To establish order the North West Mounted Police (later the Royal Canadian Mounted Police) in 1875 built Fort Walsh in the Cypress Hills.

Before the Canadian Pacific Railway entered Saskatchewan, a few United States cattlemen in search of grazing land crossed the border on horseback and in covered wagons. A trickle of Canadian settlers, in Red River carts, came from Manitoba.

The axe, principal tool of the bushland pioneer, lost its importance on the open plain. Though Scottish born Selkirk settlers had grown wheat in Manitoba's Red River valley after 1812, axe-conditioned pioneers had long paused at the threshold of the open plain. Saskatchewan's first pre-railway agricultural settlements were made in the park lands region on the edge of the forest region. After 1750, French free traders, the Hudson's Bay Company, and the North West Company established fur trading posts along the North Saskatchewan River and the main stream. In the wake of the fur traders came the missionaries, priests and clergy of the Catholic and Anglican churches. Cumberland House was the first permanent settlement (1774) established in the province. There were then no fur conservation programs and with the decline of the beaver population, men turned their minds and hands to frontier agricultural settlement along the river highway where there were logs for building and firewood.

The coming of steam railways in the 1880's was followed by a rush of land settlement that continued until nearly 1914 when economic recession and unemployment followed by World War I ended large scale immigration in North America. By 1912 the plough was everywhere, binders and threshing machines hummed in harvest



North Hoist, 3rd Mine Shaft, at Hudson Bay Mining and Smelting Company's Flin Flon Mine.

Main Street of Goldfields on the rock-ridged north shore of Lake Athabaska. Prospecting continues nearby in the pitch blende, source from which uranium is extracted. E. N. Davis photo

fields—the barbed wire fence and the tall red grain elevator had become the landmark and symbol of civilization on the plains and and in the park lands. While prairie city Saskatoon began and grew with simultaneous railway expansion, Prince Albert and Battleford, both on the North Saskatchewan River, were already established communities. As recently as 1908, before the Grand Trunk Pacific Railway had crossed Saskatchewan, prairie homesteaders travelled with ox wagons 100 miles round-trip to Battleford for supplies.

It was in the Battleford area that the fluctuating, unpredictable leadership of Louis Riel finally failed in revolt to get redress for the grievances of Metis and Indians which merited earlier attention. Some of the troops from Upper Canada who helped quell the Riel Rebellion asked for discharges and stayed on as settlers. Those who returned to Ontario took back with them word of the promise of the west. The adventure and success of the military campaign received prominence in British newspapers, served to attract settlers from the British Isles.

A second wave of settlers in the park lands came from Europe; German Men-

Rebuilding No. 1 trans-Canada highway between Regina and Moose Jaw, summer of 1946. The 40 mile level stretch connecting the two cities is paved. In the sparsely populated province the Department of Highways is faced with maintaining more highway mileage per person, than any other province.

S.F.B. photo

Right:—Rains failed to come at the right time for this drought-stunted wheat crop prematurely headed and ripened. Man examining it estimates 8 bushels to the acre. More moisture could have meant a paying crop of 25 bushels to the acre; unusually good and rare growing seasons here have produced 50 and more bushels of wheat to the acre. Photo by G. M. Dallyn

nonites from Russia, Dukhobors from Russia Ukrainians from Galicia and Bukovina provinces of the western Ukraine (now in U.S.S.R.) then under the Austrian-Hungarian Empire; and Magyars from Hungary. Canadian railway and Federal Government immigration and colonization authorities were apprehensive that these central European immigrants would want also to settle on the open plain where plough's progress toward horizon's rim was unhindered by trees or hills. The Canadian Northern Railway and the Grand Trunk Pacific Railway (amalgamated into Canadian National Railways, 1920), both of which had made their western start later than the pioneering Canadian Pacific, were anxious for settlers along their lines bordering, or running through, the park lands region then looked on as "scrubland" by many wheat-minded settlers from the United States, the eastern and central Canadian provinces and the United Kingdom. But the central European—to use this somewhat ambiguous term—did not desire the plains. He wanted that which had been owned by the landlord, and was very scarce in his native land—wood; wood for building, wood for fuel. His wife too, and the grandparents, liked the prospect of shelter for garden, natural hay for oxen and milk cow. This choice served them well during the great drought of the

Left:—One man operates tractor pulling combine. To help pay for machinery like this, prairie farmers take their harvesting machinery as far south as Texas to harvest earlier crop there, work northward through Oklahoma, Kansas, Nebraska, South Dakota and North Dakota to be home for harvest in August and September. Throughout the Great North American Plain topography, geology, winds and aridity are similar though temperatures vary.

Photos by G. M. Dallyn

Right:—Combine harvester pulled by tractor. Standing grain is cut and threshed in one operation. When hopper (top right) is full, grain is emptied into truck or wagon. Combines are operated day and night in harvesttime; at night powerful floodlights illuminate machinery.

Extreme left page top and (inset) above:— Hard work with little play built these attractive farm houses in the open plains region. Shelter belt and gardens require much initial effort, continued cultivation.

Photo by G. M. Dallyn

nineteen-thirties when much of the southern plain temporarily became a dry and desolate land of shifting soil, Russian thistle—dust.

There is a similarity in climate, crops, markets and agricultural technology of both the park lands and the plains regions, sufficient to provide a common background to Saskatchewan's farming population as a whole. This conditioning is evidenced in spontaneous neighbourly co-operation; in the growth of the organized farmers' movement which, during forty years of evolution, launched the Saskatchewan "Wheat Pool" (Saskatchewan Co-operative Wheat Producers Limited), the consumer co-operatives, credit unions, and political action resulting in the election of the first CCF (Co-operative Commonwealth Federation) government on our North American continent.

As Saskatchewan is still mainly an agricultural province—by far the greatest source of coarse grains and a leading hog, beef, egg, poultry and honey producer—the contribution of the farming population toward economic, social and political trends, is understandable. Comprising a substantial minority, the active members of the organized farm movement continue as a very influential group within the province. Though these men and women are of varied national and racial backgrounds and many religious beliefs, their common, day-to-day problems, their persistent economic struggle for "a better price for wheat," "lower freight rates," "parity prices for farm products" have, within one generation, brought about a unity of purpose that seems a perpetual source of surprise to the residents of older

Horses still work on the prairies though the rubber-tired tractor, combine harvester and oneway seeder have reduced their economic value. There is a tendency to develop a general purpose horse fit for the wagon, the sleigh, the saddle.

Photo by G. M. Dallyn

Bushville School, one of many schools belonging to a larger school unit. Advantages of administration include: equalization of operating cost; bulk purchasing of school facilities; unit conferences among teachers; employment of teachers trained in specialized subjects; library exchange and audio-visual education. Inset:—Mode of production of prairie farms trains youngsters to be self-reliant, resourceful, co-operative. Ten or twelve year old boys take their turn at the tractor wheel; girls help with housework. At Needwood School, Landis, where these children attend, pupils have their own co-operative store in the school from which they buy their school supplies, annually elect their co-operative executive.

Photos by G. M. Dallyn

Below:—Prairie-horse Cavalry. Part of a lineup for quadrille on horseback in a plains village. Some of these horses are saddle-type, others are marginal plough horses. While the specialized breeds in use on eastern and central Canadian farms came directly from the British Isles and western Europe, the evolving general horse of mechanized grain farming on Canada's plains has a broncho strain traced back to Mexico, Spain, Moorish Africa, Arabia, and the steppes of Asia.

Present mixed breed is hardy, grows a hairy coat in winter, is turned loose to forage in bands through snow-blown stubble. While thousands of plains horses have been sold to slaughter houses and packers for fox meat, and export to Europe, some grain farmers feel the horse may again become a necessity to local living in the event of industrial breakdown.

S.F.B. photo

Main Street of Biggar, railway divisional point, commercial distributing centre of grain and livestock farming area. Photo taken at 5.30 a.m. Biggar (population 1,930) typifies about 20 Saskatchewan towns with populations between one and three thousand.

Photo by G. M. Dallyn

Former RCAF building made into community apartments for World War II veterans and their wives and children. S.F.B. photo

Ferrying a section of former RCAF building across the South Saskatchewan River, for Matador Veterans' Co-operative Farm. These buildings, purchased by the Saskatchewan Government, were cut in sections at St. Aldwyn's Airport, hauled 35 miles on double trailer truck.

In Landis village (population 181) this departmental co-operative enterprise does an annual business of $200,000, is owned by 450 shareholders, the majority of whom are farmers in the surrounding area.

Photo by G. M. Dallyn

Premier T. C. Douglas inspects new projector in Saskatchewan film censor's office. Ideas as to what is a good motion picture, fit for the public to see, vary in different provinces of Canada, each of which has its own censorship. S.F.B. photo

Recording room of Radio Station CFQC, Saskatoon, one of seven commercial stations in the province. Radio's importance for news dissemination and commentary is proportionately great in this province where majority of a relatively large farming population do not receive a daily newspaper. In far northern Saskatchewan, land of this minute's radio and last year's newspaper, trapper, fisherman, and prospector get their outside news and entertainment mainly over the air. Hillyard photo

provinces wherein there is much greater diversification of industrial and financial activity, readier access to markets—and more rain.

Technological advance in farm machinery has, within a generation, hurried the plains region farmer from ox-drawn plough to four-horse binder, through the now dinosaurian age of the steam-thresher with its crew of 20 men, to today's rubber-tired power combine and one-way-seeder with which one man can farm a section (640 acres) of grain land. The grain farmer of today has to be and is a mechanic. In place of the symbolic straw hat, he wears a locomotive-engineer's cap in summer, a fur lined canvas covered parka against winter blizzards; and is probably the world's most able artisan in any emergency requiring pliers and blowtorch.

While the ideas of relatively ancient farm associations, such as the Grange, and the "Patrons of Industry", were brought to Saskatchewan by settlers from the middle-western United States and the eastern and central provinces of Canada, the first significant Saskatchewan farm organization was the Territorial Association formed at Indian Head, December 1901. The name was derived from the Northwest Territories, conversationally shortened to "the Territories", as the Province of Saskatchewan, like Alberta, was not pencilled out of the Northwest Territories until 1905. The Territorial Association, a farmers' "pressure group" cutting across political party lines, arose directly out of a clamour for the right to use railway loading platforms at shipping points where there were no grain elevators, or where it was felt that grain grades and prices offered by the elevator companies were lower than they should be. The organized farmers asked also for the right to the railway-car order book so they too could order boxcars as did the elevator companies. These rights the organized farmers gained for all farmers. The Territorial Association became the Saskatchewan Grain Growers Association in 1906.

Out of this farmers' movement came the Saskatchewan Wheat Pool—today the largest grain elevator concern in North America. A militant wing formed the Farmers Union of Canada which in 1926 merged with the Saskatchewan Grain Growers Association, to form the United Farmers of Canada, Saskatchewan Section. After launching political action in 1930 under the banner of the Saskatchewan Farmer-Labour Group which two years later spearpointed the formation of the Co-operative Common-

wealth Federation, the United Farmers of Canada, Saskatchewan Section, withdrew (in 1935) from direct political participation, to devote again full time to educational work and pressure group activity. The U.F.C. led the 1946 farmers' thirty-day strike for parity prices, in Saskatchewan, in combination with the Alberta Farmers Union.

Free enterprise, termed non-co-operative enterprise by co-operative partisans, is very much alive in Saskatchewan. Saskatchewan's cities and towns have their service clubs the same as other Canadian cities and towns. Rotarians, Kiwanians, Kinsmen and Lions flourish; Boards of Trade, Chambers of Commerce and the Retail Merchants Association are affiliated with similar and identical groups from Glace Bay, Nova Scotia, to Prince Rupert, British Columbia.

The Canadian Legion is the principal World Wars I and II veterans' association and membership is increasing. Despite relatively little industrialization, the Canadian Congress of Labour and American Federation of Labour are actively represented in their respective local unions whose right to collective bargaining and non-discrimination against an employee for union activity, is protected by an act of the legislature. Saskatchewan has the highest workmen's compensation rate in Canada. The Saskatchewan Teachers Federation, nurtured in the years of depression and drought when teachers in rural schools received as little as $100 a year, is largely responsible for higher teaching standards facilitated by legislation making $1,000 a year the minimum salary for qualifying teachers, and $1,200 for those with permanent certificates.

As the *Saskatoon Star-Phoenix* (circulation 30,000), one of the province's four daily newspapers, points out editorially, Saskatchewan folk demonstrate their hardiness in ways other than invulnerability to climatic extremes; they listen to speeches and take part in numerous organizational meetings with equal facility. There is at least one association which draws its membership and support from men and women of all occupations—stockmen, grain farmers, businessmen, trappers, university professors, civil servants, bank managers; oil refinery, packinghouse and flour mill workers, railroaders; priests, clergy and pastors; C.C.F., Liberal, Progressive-Conservative, Social Credit and Labour-Progressive (Communist) politicians, and Technocrats—the Hudson Bay Route Association, successor to the On-To-The-Bay Association, committed to ardent promotion of ocean trade through Port Churchill on the western shore of Hudson Bay, in the hope of some day reducing the amount of money expended on the long rail haul to eastern ports and the Atlantic seaboard. It is considered heretical in Saskatchewan to discourage the united striving of an inland people for a seaport one thousand miles nearer than Montreal, fourteen hundred miles closer than Saint John and seventeen hundred railway miles nearer than Halifax.

What is it that caused Saskatoon people to build, through popular subscription, a community hockey and curling rink, and stadium, complete with artificial ice plant and removable floor, in the midst of the depressed thirties? Why is it that Saska-

"Give me the open road"
Photo by G. M. Dallyn

Saskatoon—the city of bridges Photo by G. M. Dallyn

toon, with a population of 50,000, has long supported a fifty to sixty piece symphony orchestra? What made Regina dam the trickle-in-a-mud-flat, Wascana Creek, until it became water enough for prairie lads of the R.C.N.V.R. to practise rowing and seamanship and so contribute sailors to the Royal Canadian Navy's best divisions? How does Swift Current with a population of 6,000 support a newspaper with a metropolitan makeup? Why do the prairie provinces, financially poor in relation to North American centres of industry and finance, produce more airmen for war and peace in ratio to population than areas more favoured by both nature and man-made conveniences? What accounts for the export of hockey players?—an annual transaction unrecorded among the statistics in *The Canada Year Book*.

Perhaps the answer is to be found in its natural heritage: this is a land of luring horizon, brilliant sunset and sunrise. The country with a "next year" no matter how difficult this. The sky seems very high above clear sun filled summer days; higher still on a winter's night when full moon reflects hidden sun and drifted snow sends moonlight silver white. Above the coyote's howl and locomotive's optimistic moan and far beyond the shifting, flashing aurora borealis, are hard bright stars, beckoning. Maybe the sky's the limit in this land of restless-minded, neighbourly, mobile people who live

Modern Saskatoon houses

Photo by G. M. Dallyn

in what Dr. (Father) M. M. Coady, Canadian Maritimer of North American co-operative fame, calls "the home of expanding souls".

Trans-Canada air travellers flying across the prairie-west of ripening summer, see a patchwork quilt of fields in crop, fields in summerfallow, farmyards and village roofs, an immense altering pattern that focuses the immediate attention of the visitor on something that is characteristic, different and intriguing.

It is the stranger travelling close to the ground, the tourist in automobile and railway coach, the uninitiated from balmier, rounder humid lands—it is she who is disturbed with sudden introduction to a flat and treeless desolation of open plain; angular unrelieved starkness of farm-house and village-store; unconcealed, unpainted outhouse boldly protruding, like buildings in a Hurley painting.

Nude grey metallic creamcans stand stoically on worn rough planks of wayside station-platform. The wind blows, animates a brown dry broken weed in an eddy of dust. Eddy of dust embraces a flapping grey page of newsprint, whirls it upward. The tumbling weed disappears beneath rusty iron bones of an apparently abandoned piece of farm machinery.

The through tourist—he may cross the plains hurriedly a thousand times and remain a stranger to them—asks "How do people go on living in this place?" He cannot know the answer unless he himself would stop off. Nor will he find a complete answer in prairie born and raised Hamlin Garland's verse *The Farmers Wife:*

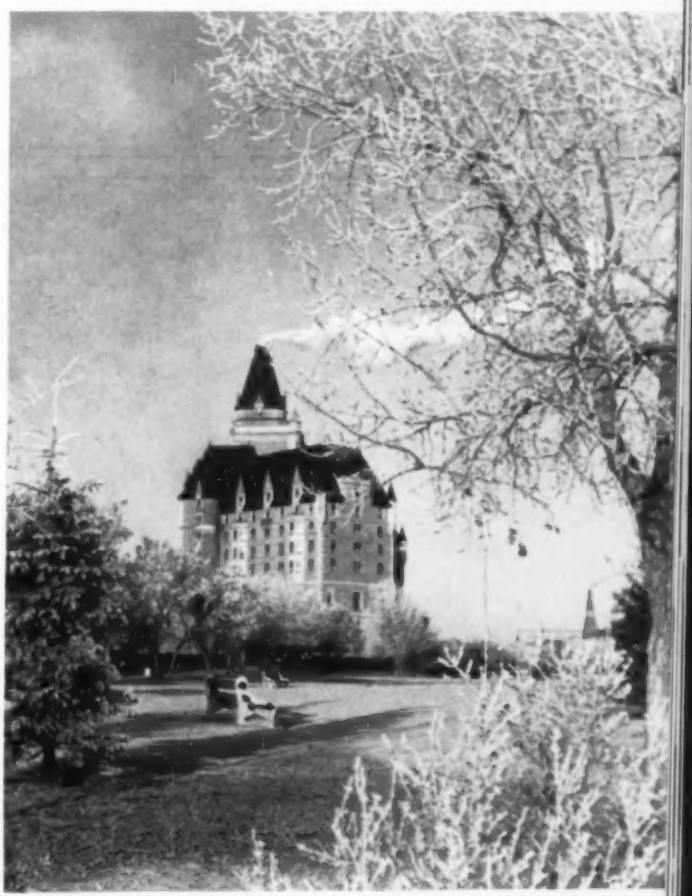
> "Born an' scrubbed, suffered and died."
> That's all you need to say, elder.
> Never mind sayin' "made a bride,"
> Nor when her hair got gray.
> Jes' say, "born 'n worked t' death";
> That fits it—save y'r breath.

It is true the farm women with their men, and the children, have worked long and hard, have produced huge quantities of food —and from year to year have never been sure of sufficient income in time of national peace.

Three-quarters of Saskatchewan's 900,000 people are either engaged directly in agriculture or wholly dependent on the agricultural industry for a living. This seventy-five per cent live mainly on isolated farms, or in village centres of less than one-thousand population.

The total area of Saskatchewan is one hundred and sixty million acres. Agriculture is conducted only in the southern half of the province, but this southern half contains thirty-five and a half million acres—forty per cent of Canada's cultivated acreage.

There are approximately 140,000 farm homes in Saskatchewan, 100,000 of the farms being smaller than one-section (640 acres) in size, though the tendency toward larger units of farming is increasing. About two-



The Bessborough Hotel, Saskatoon
Star-Phoenix photo

thirds of farm income derives from grain crops, roughly one-third from livestock, dairy products, poultry, honey.

Dry farming is a hazardous occupation. Only a little irrigation has been completed, consequently grain crops are dependent almost entirely upon natural rainfall and melted snow. The average precipitation is just sufficient to produce a grain crop from the fertile soil. In 1942, one of the best years, Saskatchewan's average cash income per farm was $1,361 compared with a Canadian average of $1,474. Not more than five per cent of Saskatchewan farms were free of debt in 1934, a bad year. In some wheat areas the debt per farm averaged $10,000 in the difficult year of 1935. Fifty-two per cent of Saskatchewan farms are operated by owners; the tenancy ratio is increasing.

These marginal conditions of operation have had a repressive influence on living conditions. Only twelve per cent of rural homes in the province are heated by modern furnaces, 4.8 per cent have electric lights, one per cent have flush toilets. Average value of farm home dwelling is $938.

Left:—University of Saskatchewan buildings in Saskatoon. Photos show, top to bottom: the Observatory; Qu'Appelle Hall, Saskatchewan Hall in background; the Chemistry Building; College Building. The University was established in 1907 by the Legislature, from which it receives financial support but is free from political control.

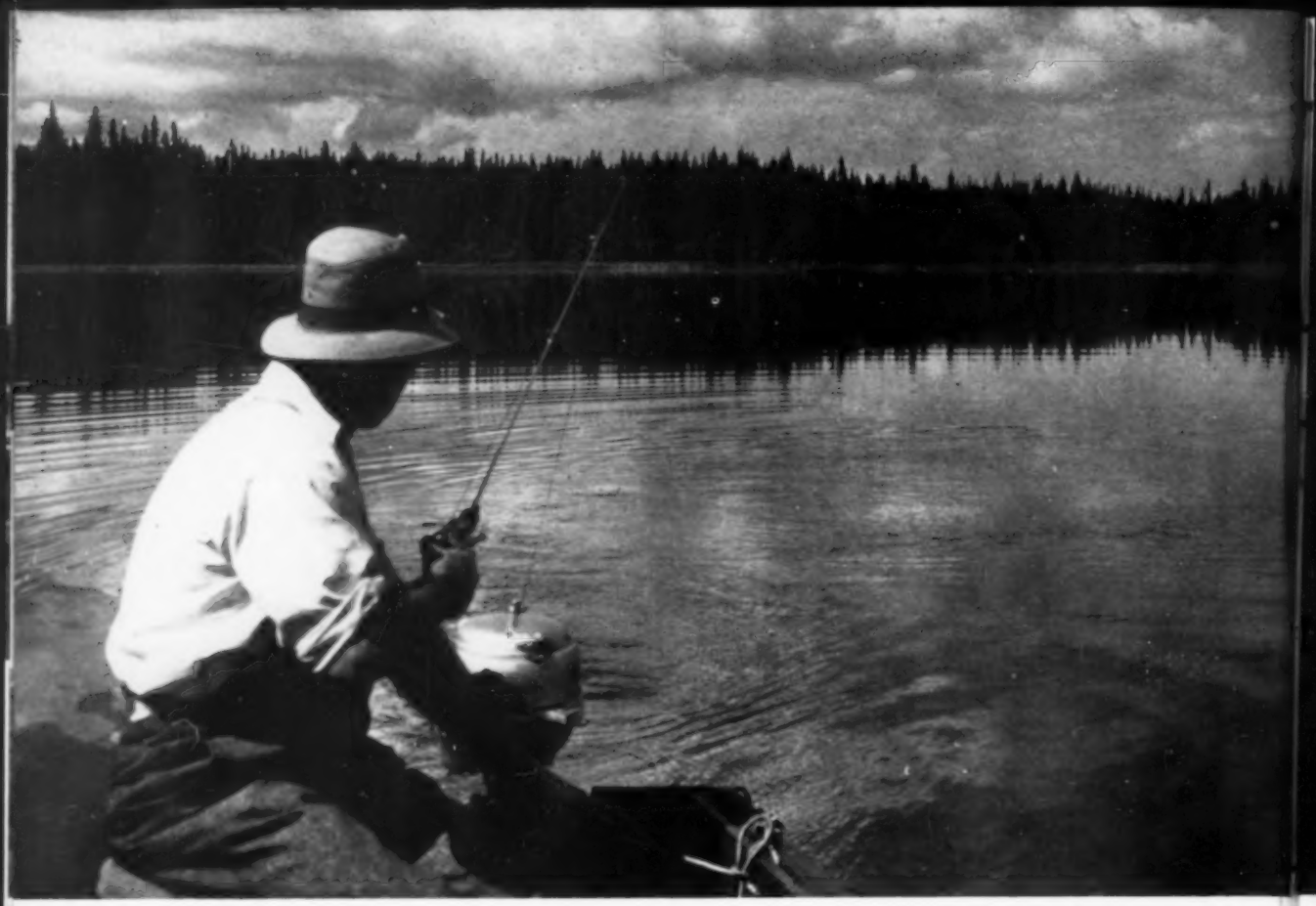
Below:—A historic landmark in Saskatoon—Third Avenue United Church.

Photos by G. M. Dallyn

Saskatchewan farmers are noted for their optimism. Conscious of conditions under which they operate, many still look for "next year's" bumper crop. On the strength of the hope of next year, together with desire to cut cost of production, the farmer strives to keep up with the technological advance of the machine. Consequently, the majority of farm families have automobiles or trucks of some kind, while only 3.7 per cent have bathroom facilities in their homes; thirty-nine per cent of Saskatchewan farms have tractors while less than one per cent have vacuum cleaners. Because the

At top:—Legislative Building, Regina. Here was treeless short-grass plain when the buffalo hunters came from Manitoba's Red River Valley. It was much the same when railway surveyors came ahead of the mainline's westward thrust. S.F.B. photo

Right:—Winter comes to Saskatchewan's university. In mid-November 1946 snow and winter came simultaneously, temperature dropping within 48 hours from a summer 50 degrees to 7 below zero. Les Saunders photo



Above:—Fishing from "kicker" power craft on Crean Lake, Prince Albert National Park, a few miles north of Waskesiu Lake.

Whitefish, lake trout, pickerel (walleyes), northern pike, sturgeon, tullibee, grayling, perch and goldeye are native to Saskatchewan waters. Loch Leven trout, brown trout, rainbow trout and large-mouth bass have been introduced to various lakes and streams in provincial parks. S.F.B. photo

Left:—Holiday fishermen landing a 25 pound lake trout from Cree Lake in the Precambrian region, 295 miles north of Prince Albert. E. N. Davis photo

Right page:—Round Lake, of the Qu'Appelle River valley system. Qu'Appelle Valley in the southeastern area of the park lands region is known for its beauty. Leader-Post photo

farm is the producing unit, household improvement has long awaited "next year's crop".

Farmers are concerned about their situation. During World War II they received higher prices than they had received since World War I. But they are worried about the next drought, the next slump in prices they may receive for primary agricultural products. They continue to ask the Federal Government to set up a fact finding board to establish prices for agricultural products in relation to the price the farmer must pay for what he has to buy. (Parity prices).

For many years farm people have tackled economic problems through co-operative action. Saskatchewan, leading province in such enterprise, in 1946 had a co-operative membership of 430,000, many individuals holding membership in more than one co-operative.

A new chapter in a way of life is emerging. Though still a minority, an increasing number of farmers, seeking a method to eradicate rural isolation and obtain the amenities of living available in this technological age, look to co-operation in agricultural production. So far, thirty-two co-operative farms (nine of which are developing towards co-operative communities) have been organized. At least forty-five other groups are studying ways and means of farming co-operatively. Groups that have organized find more than economic advantages. They find that co-operative farming leads to a more satisfying social life for their families, increased recreational facilities for their children, less hardship and frustration for mothers and wives, more inducement "for the young folks to stay at farming".

Co-operative farming reduces operating overhead, allows installation of electricity and plumbing, and develops community life. Thus, aside from national and world economic factors beyond the control of the western prairie dweller in plains and park lands regions, it may well be that co-operative farming, combined with scientific

agriculture, offers a useful approach to the economic use of larger units of farm land.

Climate

January is usually the coldest month and July the warmest. January average temperatures vary from about 10 degrees Fahrenheit in the southwest to 23 degrees below zero in the northeast. Over the plains region, temperatures vary from 10 degrees to zero; park lands, zero to 5 below; commercial forest region, 5 below to 10 below; Precambrian region, including the tundra "land of little sticks," 10 below to 23 below.

July average temperatures vary from 67 degrees across southern Saskatchewan, to 57 degrees across the north, the 60 degree isotherm running to the south of Reindeer Lake and Lake Athabaska.

Very low temperatures do occur in December, January and February. Lowest recorded vary from 50 to 60 below on the plains; 60 to 70 below through the forest region to the Saskatchewan-Northwest Territories boundary. July and August temperatures have been recorded as high as 110 in the south, and over 90 in the north.

Average precipitation decreases from south to north, increases from west to east. Lowest values (14 to 12 inches) occur in a precipitation zone running from the south of the province to the extreme north, and including the "short-grass" plains and the western half of the park lands and commercial forest. Precipitation in form of snow increases almost uniformly from about 25 per cent in the southwest to more than 40 per cent in the extreme northeast.

Cree Indian trapper Sammy Ross paddles his canoe near his home at the north end of Montreal Lake. He is recognized as one of the expert trappers in his area. E. N. Davis photo

Canoeing in the Cypress Hills Provincial Park, an oasis of lake, stream and softwood forest in the southwestern area of the open plain.
Bureau of Publications photo

Thus it is seen that there is not more combined rainfall and snowfall in northern Saskatchewan than in southern Saskatchewan. Yet the north has many lakes and rivers, much forest. In the northern clay and forest belt and much more so in the area of Precambrian rocks, the precipitation neither evaporates or seeps into the ground as rapidly as it does in the plains and park lands regions. More precipitation in the north falls in the form of snow, melts slowly

in spring as compared to the south, frost stays longer in the surface and in the far north never comes completely out of the ground.

Wind mileages (as observed close to the surface) are considerably greater on the plains than in the forest region. This is due to the frictional drag of the forest on the surface air. Wind averages vary little from month to month. At Scott (plains wind station west of Saskatoon) average monthly mileage is about 8,400, while in the forest it is about 4,800 miles. (The authority for these values is Physics Professor B. W. Currie, specialist in climate, University of Saskatchewan.)

Admittedly vigorous, the climate is healthy. And the well known prairie boosters' apology, "You don't feel the cold (or the heat) out here because of the dry air," has basis in scientific fact.

Industries Other Than Agriculture

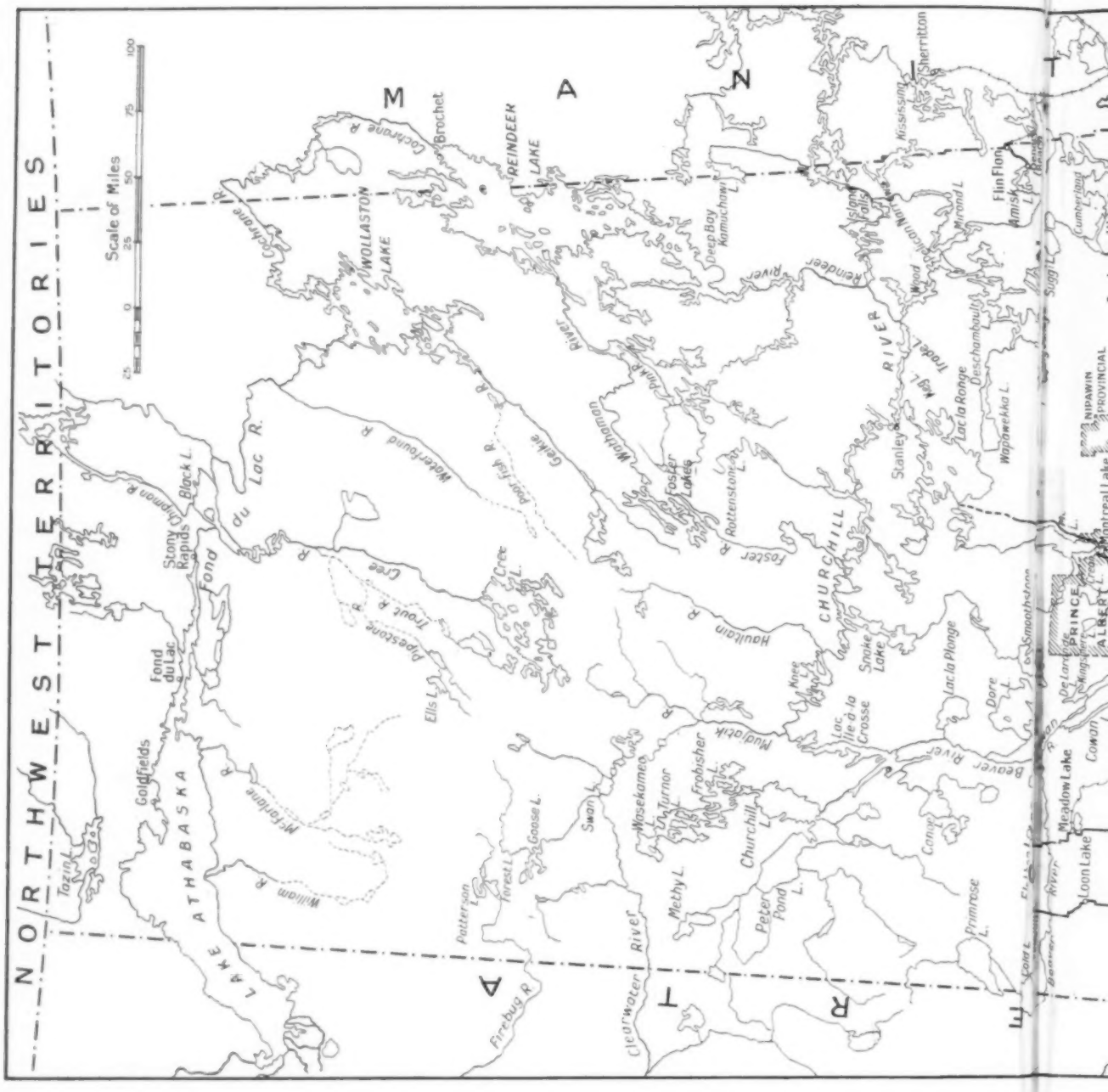
Value of Saskatchewan's hard-rock mining production for the year 1943 was just over twenty-two million dollars (*The Canada Year Book*), more than double that of Manitoba. Of this figure, copper valued at ten million dollars accounted for somewhat less than half the total. Gold was second with a value of six and a half million dollars. Other metallics were zinc, silver, cadmium, selenium. Almost the entire production was from the Flin Flon mine of the Hudson Bay Mining and Smelting Company. The ore body lies astride the Saskatchewan-Manitoba boundary, and 89 per cent of ore mined in that year came from the Saskatchewan side.

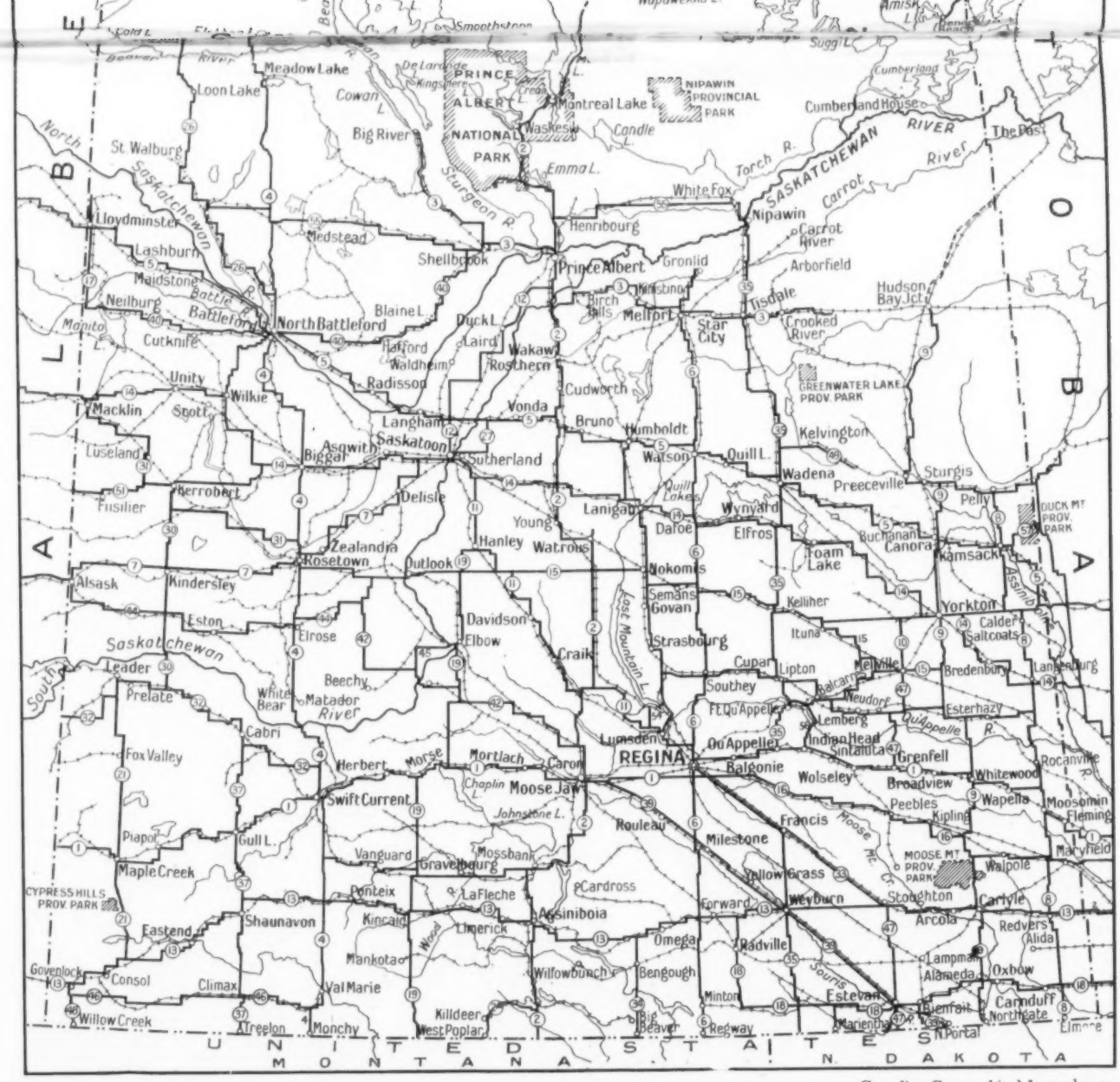
Another adequately financed hard-rock mining operation was that of the Consolidated Mining and Smelting Company, at Goldfields, on the north shore of Lake Athabaska. Medium to low grade ore and a labour shortage during World War II caused this gold mine to shut down. Interest in Goldfields vicinity is centered in pitchblende ore, source of radium, uranium—and atomic power.

Among promising mine areas are Lake

Snowshoers and sundogs. The showshoers are standing in front of the sun. To each side, beyond the rim of trees, is a vertical shaft of light. These vertical shafts of reflected sunlight, called sundogs, are due to an atmospheric condition sometimes preceding colder and stormy weather. The lake is one of a number in Saskatchewan's commercial forest region.

Les Saunders photo


NORTHWEST TERRITORIES
MANITOBA
Scale of Miles
0
25
50
75
100
WOLLASTON LAKE
REINDEER LAKE
Brochet
Cochrane R.
Cochrane
Reindeer River
Deep Bay
Kamuchawie L.
Sherritton
Flin Flon
Amisk L.
Cumberland L.
Wood
Island Falls
Mirond L.
Trade L.
Deschambault L.
Lac la Ronge
Wapawekka L.
Stanley
RIVER
Wathaman R.
Foster Lake
Rottenstone L.
Foster R.
Waterfound R.
Geikie
Poor Fish R.
Black L.
Stony Rapids
Fond du Lac R.
Fond du Lac
Chipman R.
Pipestone
Trout R.
Cree
Cree L.
Ells L.
Goldfields
Tazin L.
ATHABASKA
LAKE
McFarlane R.
William R.
Patterson L.
Forest L.
Goose L.
Swan
Nasekamen
Turnor
Frobisher L.
Churchill L.
Methy L.
Peter Pond L.
Clearwater River
Firebug R.
Mudjatik
Haultain R.
CHURCHILL
Knee
Snake Lake
Loc. Ile à la Crosse
Lac la Plonge
Dore
Beaver River
Smoothstone
Primrose L.
Meadow Lake
Loon Lake
PRINCE ALBERT
NIPAWIN PROVINCIAL



Note:—Highway numbers are shown in circles.

Canadian Geographical Journal map

Spire of St. Jean Baptiste mission church at Ile a la Crosse, on the site of the mission established by Roman Catholic Oblate Fathers LaFleche and Tache. Centennial was celebrated July 1, 1946, when Chipewyan Indians were pictured kissing late Cardinal Villeneuve's ring. E. N. Davis photo

Athabaska, Rottenstone Lake, Reindeer Lake and Lac la Ronge. Sixty per cent of the Precambrian region of the Province has been covered by air-photographs; geological maps, scale 4 miles to the inch are now available to prospectors.

Value of coal production during 1943 amounted to two and a half million dollars, according to *The Canada Year Book*. The coal in Saskatchewan is all lignite. Best known coal producer is the Souris River area extending south into North Dakota. The coal mining town of Estevan is on the Saskatchewan side of the international boundary. More than half the plains region has lignite-bearing formation. During the combined drought and 30-cents-for-a-bushel-of-wheat period of the nineteen thirties, farmers took their wagons to the sides of coulees where coal seams were exposed, dug out low grade lignite to keep the home fires burning. Alberta's bituminous coal mines supply much of the coal consumed for heating, and steam-electric power in Saskatchewan cities.

Lloydminster — provincial - boundary - straddling town (population 1,700) where you get your mail at the post office in Saskatchewan and buy your railway ticket at the station in Alberta—is a growing centre of oil and gas development and production. Largest share of this area's oil is produced on the Saskatchewan side. Production in 1940 was 331 barrels; 1945, 16,508 barrels. Production for 1946 was climbing toward the 150,000 barrel mark.

Much of the plains and park lands regions is prospecting ground for oil and natural gas. Surface geology is more difficult than in the foothills of Alberta and Montana, due to Saskatchewan's heavy covering of glacial drift.

Crude oil and natural gas development and production is left in the hands of free enterprise. The Minister of Natural Resources and Industrial Development outlined Saskatchewan Government policy as encouragement "to legitimate development . . . but we want performance and there has been a general stiffening of work requirements. There is no place in the field for lease hounds and speculators".

Natural gas is produced in the Lloydminster field in quantity estimated sufficient to supply Saskatoon city and intervening towns, villages and farm homes; it awaits a

pipeline. Natural gas is produced near the town of Unity. In both Unity and Lloydminster, coal stoves and furnaces have been converted to burn gas. Near Kamsack there is a shallow gas field straddling the Saskatchewan-Manitoba boundary.

Drilling for oil in the Unity-Vera area revealed common salt (sodium chloride) in commercial quantity. In 1946 the Saskatchewan Government signed an agreement with the Prairie Salt Company, subsidiary of Dominion Tar and Chemical Company, Montreal, the company to spend one million dollars in a plant with minimum daily capacity of 25 tons.

More than 200 alkali deposits composed almost entirely of sodium sulphate have been located in the plains region. Saskatchewan is the only province shipping sodium sulphate from naturally occurring deposits. Chief markets are in Ontario and Quebec.

Printing and publishing in 1946 was within the three million dollar mark. Four daily newspapers and 140 weekly newspapers accounted for the bulk of the monetary value. Among weekly newspapers recognized by awards is the *Yorkton Enterprise.*

With Saskatchewan's oil production industry in the development stage, bulk of crude oil for refining is brought in tank cars from the United States and Alberta. Value of petroleum products refined, processed and sold in the province during 1946 is estimated at twenty million dollars.

Market value of saw timber and related forest products for year 1944 was more than five and a half million dollars, of which 163,986,000 f.b.m.* was saw timber. Present forest administration is not concerned with bemoaning past wasteful exploitation which belongs to an era when men may have thought North America's natural resources were illimitably expendable. Today's forest conservation and development policy in practice by the Department of Natural Resources and Industrial Development, includes: extensive thinning; no more sale of timber on the stump; extended contract logging; multiple production; summer operating; new roads; increased fire protection; public education; forest farming; further utilization of by-products; orderly marketing through Saskatchewan Timber Board; and return of surplus revenue to the people in form of increased health and welfare services.

Combined wild fur and fur farm production for season 1943-44 totalled three and a half million dollars of which $853,231 was from fur farms. Of the wild fur, weasel pelts led in value ($637,000). In the principal wild fur bearing area which includes the commercial forest, Precambrian and sub-Arctic regions, a government policy of fur conservation is voluntarily enforced by resident trapper-elected councils. Representative councils of five members each, must include members of every race (Indian, Metis and white) even though there be only one member of a race living in a particular fur conservation area. In the words of the Saskatchewan Game Commissioner: "Trappers will obey a law made by themselves, more readily than a law made in Regina." The Saskatchewan Fur Marketing Service, only government operated fur agency in North America, markets the pelts at five per cent commission which covers transportation, storage and handling.

*Feet board measure

House of the school teacher at Stony Rapids on Fond-du-Lac River, in the Precambrian region, near the Northwest Territories. Picture was taken with an ordinary box camera, with 5-minute exposure after midnight, December 19th, 1945.
Hovdebo photo

More than twelve and a half million pounds of fish valued at a little more than one million dollars were marketed in 1943. As a result of request by eighty per cent of fishermen who returned government questionnaires, the government established the Saskatchewan Fish Board. The board operates three fish filleting plants, at Lac la Ronge, Beaver Lake and Meadow Lake, where fish purchased from local fishermen is inspected, graded, filleted, quick-frozen, wrapped, and packed out by plane, boat, tractor and truck.

A Box factory in Prince Albert. Lumber for the boxes is sawn by portable mills in commercial forest region north of Prince Albert. S.F.B. photo

The People

Bush pilots, flight engineers, radio operators, foresters, fish and fur supervisors, game guardians, provincial park superintendents, school teachers, doctors and nurses are selected not only for ability in their respective jobs but also for their desire and capacity to work together in the sometimes exciting, always exacting, job of building the North now and for generations to come.

This Northland's first community schools —attended by children and grownups of all racial and religious backgrounds—have been built, equipped and staffed by the Department of Education. The Department of Health, in accord with advanced health legislation and services, continues to build and equip community hospitals in this vastness where the whir of the airplane means to trapper, fisherman, timber cruiser and prospector, what the locomotive's whistle meant to the plains and park lands pioneer settler.

Varied national and racial backgrounds, neighbourly inter-dependence, religious cosmopolitanism, dependence on world markets, and geographical location in the pathway of Polar airlanes, combine to make Saskatchewan people aware of a world made one by science and technology—a global predicament in which acceptance of Christ's

Left:—Airview of Consumers Co-operative Refinery, Regina. The plant covers 30 acres, has crude oil refining capacity of 2,000 barrels a day. Saskatchewan's mechanized grain farming, isolated farm-houses and scattered communities mean more individual consumption of gasoline in ratio to population than any other province. W. L. West photo

Left bottom:—Saskatchewan's Department of Natural Resources and Industrial Development project for extraction of sodium sulphate at Chaplin, west of Moose Jaw. Sodium sulphate, in its various forms, is used in wood pulp manufacture, glass, nickel and copper refining, tanning, dyeing and as a constituent in certain fertilizers.

In the open plain region are more than 200 alkali deposits composed almost entirely of sodium sulphate. When dry hot summer winds evaporate the water from a shallow alkali lake, the surface is covered with a bright white sheet of salt crystals. S.F.B. photo.

Right bottom:—Brick making plant at Estevan in the Plains region of southeastern Saskatchewan adjacent to North Dakota. The clays used are associated with the lignite coal seams mined in the district.

A combined survey of clays and ceramic possibilities is being continued by the University of Saskatchewan and the Saskatchewan Government. The University has included a course in ceramics in the curriculum. Saskatchewan artists, in urging the government to establish a provincial art school, see a combination of art and utility through the development of unusually good pottery clays. S.F.B. photo

Above:—A research chemist in the Government Investigation Laboratory tests new cleaner made from volcanic ash mined in Saskatchewan.
V.E. photo

Centre right:—A plant in Saskatoon. The flour and feed milling industry in Saskatchewan in a busy wartime year approached the 20 million dollar mark. Only other industry deriving from agricultural products and exceeding it is slaughtering and meat packing. A 49 car trainload of flour shipped from Saskatoon via the Hudson Bay route in August 1932 reached London, England, about two weeks later, a record combined rail and ocean transit time.
Hillyard photo

Top right:—Provincially owned and operated, the Saskatchewan Wool Products plant at Moose Jaw is one of the C.C.F. Government's industrial ventures. Photo shows girl tying threads winding on to the loom.
Monetary Times photo

Saskatchewan's Department of Health air ambulance service, first of its kind on the North American continent, was established February, 1946. Emergency cases, vouched for by a municipal councillor or other responsible local resident, are picked up and taken to medical centres, at a flat rate fee of $25.

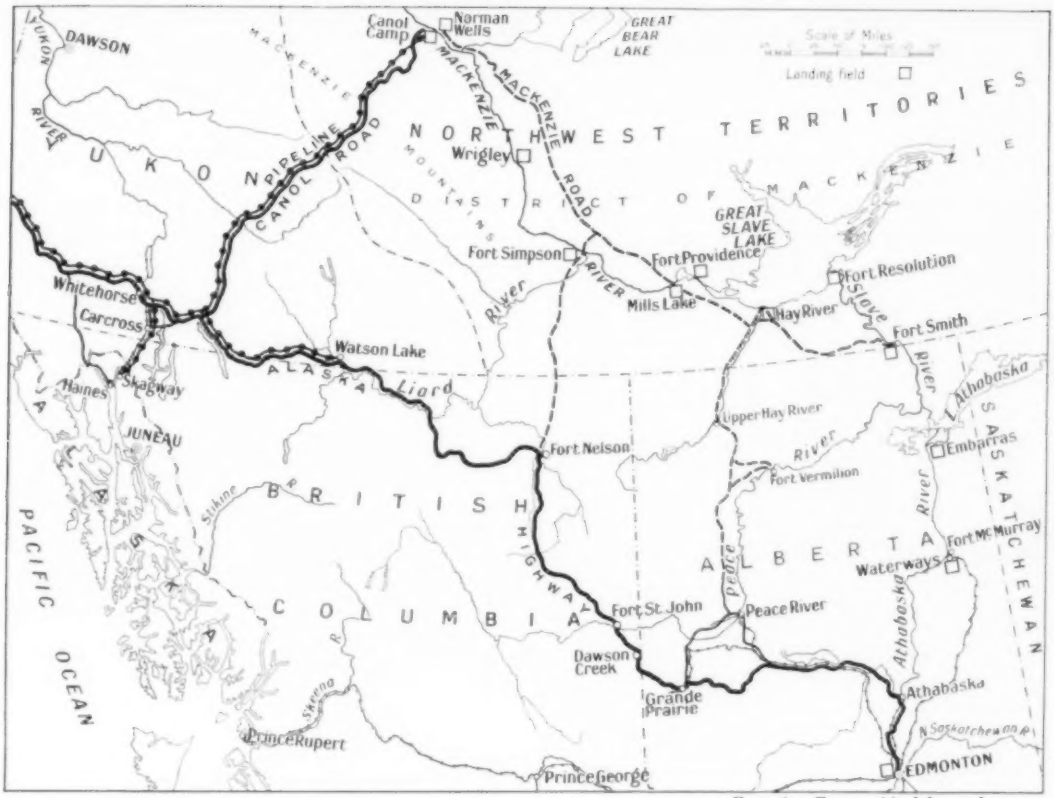
S.F.B. photo

teaching of the brotherhood of man becomes imperative. Community leaders see economic, social and political democracy the world over as the only certain way to unhampered production, unrestricted exchange of goods and services, food for the hungry of body and mind, final defence against atomic and bacteriological warfare.

Before the internal combustion engine took to wings that soared, and spawned jet propulsion in the stratosphere, men sought safety behind broad rivers, mountain peaks and billowing seas. Tomorrow's security demands removal of outmoded emotional and mental barriers, a task facilitated, perhaps, for the people of a province whose pencil-on-paper boundaries have no basis in physical barrier.

Moose Jaw's modern Health Centre, first of a number of health centres planned for the province.

Kent Photo



Canadian Geographical Journal map

*The Epic of Canol**

by RICHARD FINNIE

THE CANOL PROJECT was one of the most stupendous construction feats of its kind ever undertaken. It was also one of the least understood and most maligned. For two years it involved the labours of thousands of soldiers and civilians whose activities ranged over hundreds of thousands of square miles in northwestern Canada and Alaska.

Canol—short for Canadian oil—was conceived by the United States War Department in the spring of 1942 as a device to help fuel the Alaska Highway and its airports from the handiest local source. That source was Norman Wells in the District of Mackenzie, the most northerly producing oilfield in North America.**

When work was beginning on the Alaska Highway, Lt.-General Brehon B. Somervell, then Chief of the U. S. Army Service Forces, instructed an assistant to look into the strategic possibilities of Norman Wells. The assistant conferred with some petroleum experts and then submitted a brief memorandum to the General, recommending that a crude-oil pipeline be run in a bee-line to Whitehorse, Yukon, centrally located on the Alaska Highway, and that a refinery be erected there to handle the 3,000 barrels of fuel per day that the Norman field was believed to be capable of producing. The memorandum was approved as written, and the project was turned over to the Chief of Engineers for execution.

That was at the end of April, 1942. Almost

*This is an adaptation of an address delivered under the auspices of The Canadian Geographical Society and in the presence of Their Excellencies the Governor General and the Viscountess Alexander at the National Museum, Ottawa, December 4, 1946, in conjunction with a showing of the film "Canol", in sound and colour, photographed, written, and produced by Richard Finnie for the U.S. War Department.

**See "The Canol Project", by Oliver B. Hopkins, *Canadian Geographical Journal*, November 1943.

immediately the Imperial Oil Company was enlisted to step up the production of Norman Wells, and within three weeks a pro-tem combination of American contractors known as Bechtel-Price-Callahan was given the job of building the pipeline and the refinery, with requisite facilities. B-P-C invited me to fly to Edmonton to help them get started. Later I was taken over by the Corps of Engineers, and saw the project through to the end. I never lost my enthusiasm for it, nor my belief in its basic soundness. I hoped, of course, that it would contribute to the war effort; but I felt that ultimately it would make a greater contribution, in one way or another, to the postwar development of northwestern Canada.

At the time Canol was begun, our situation was not a happy one either in Europe or the Pacific. There was an imminent threat to our west coast and to Alaska, and indeed the Japanese soon had troops in the Aleutians. The sea lanes to Alaska might be blocked, and with a shortage of freighters and tankers it was imperative that an overland route to Alaska be opened up and given an assured fuel supply. All that was done, and with amazing speed.

Through supplementary Canol pipelines that were laid from Skagway to Whitehorse and from Watson Lake to Fairbanks was pumped gasoline that fuelled not only the ground vehicles and aircraft engaged in local operations, but also swarms of American lend-lease fighters and light bombers that were ferried to the Soviet Union for use against the Germans on the eastern front.*

The Alaska Highway and its airports were never wholly secret. From the very beginning their construction and operation were reported in the newspapers and the publicity was for the most part favourable. The Alaska Highway was quite properly hailed as a great construction triumph, aiding in the defence of this continent.

In contrast, the Canol Project, despite its integration with the Alaska Highway, was kept officially secret in its entirety for a year, and partly secret for some time afterward. But unlike the Manhattan Project, it could not be kept behind locked doors; it was too spread out for that; and all travellers, including journalists and politicians, could see some evidence of it and hear gossip about it from Edmonton to Norman Wells, Skagway to Whitehorse or Fairbanks. As soon as the first stories about it were released—and they were garbled stories—it became a target for assorted critics, most of whom were ill-informed. From first to last, Canol suffered from the lack of a consistent and reasonable public relations policy. The fact was therefore obscured that the project was justifiable as a war measure and that it had lasting peacetime value.

Before the United States Army Engineers went to work on the Alaska Highway, our own Department of Transport had established the main airports along the Canadian section of the route and commercial aeroplanes were using them on scheduled flights. Long stretches of the road itself had already been pioneered. In fact, not counting dog-team trails, there was a series of motor roads or winter tractor roads connecting a number of points along the 1600-mile route from Dawson Creek, British Columbia, to Fairbanks, Alaska. With Canol it was different.

As a job of pioneering in northern wilderness, Canol was bigger than the Alaska Highway. Before they could begin laying their main pipeline the Canol constructors were obliged to create a supply system through an immense, undeveloped region, much of which was hardly explored. In doing so they actually pioneered more airfields and more miles of roads than did the builders of the Alaska Highway. In effect, they opened up a secondary Alaska Highway with a secondary chain of airfields.

Altogether, some nine thousand miles of northern routes were used on the Canol Project, two thousand of which were pioneered by the constructors—civilian and military—and over those routes, by boat and barge, truck and tractor, aeroplane and railroad train, considerably more than a hundred thousand tons of freight were moved.

Before the war there was not a single airport for transport planes in the Northwest

*See "Canadian Petroleum Goes G.S." by John Ness, *Canadian Geographical Journal*, July 1945.

Territories—a region comprising more than a third of the total area of the Dominion. Before the war there was no road in the Northwest Territories longer than eight and a half miles. Today, in the Mackenzie District alone, we have eleven full-fledged airfields and several emergency landing strips, all but one of which were built for the Canol Project. Today, in the Mackenzie District, we have more than a thousand miles of overland roads, and in Northern Alberta, British Columbia, and the Yukon Territory hundreds of miles more of them, all pioneered for the Canol Project. We also have new camp sites and town sites, oil wells, pipelines and telephone lines, and other facilities. In connection with the Canol Project many thousands of square miles of hitherto unknown country were explored and opened up. Whatever mineral deposits they may contain are now available as never before.

On the heels of the Canol constructors came naturalists and geologists of the Canadian Government and of private organizations, and last spring over some of the roads of the project rolled the snowmobiles of Exercise Musk-ox.* I hope that these roads will be maintained and improved so that other vehicles may use them—the trucks and cars of prospectors, settlers, and tourists. There is more awe-inspiring scenery, mile for mile, along the Canol Road from Norman Wells over the Mackenzie-Yukon divide toward Whitehorse than along the three-times-longer Alaska Highway, which has some spectacular vistas of its own.

Besides its material accomplishments, Canol provided an education in modern pioneering methods: it was a colossal practical experiment in sub-Arctic transportation and construction, meeting and solving problems of permafrost (permanently frozen soil)** and cold-weather operation of equipment on a vast scale.

Although Canol was pre-eminently an American undertaking, Canadian companies (e.g. Imperial Oil, Hudson's Bay Company, Northern Transportation Company, Canadian Pacific Airlines) and Canadians as individuals had a lot to do with its success. While the labour was predominantly American, Canadian surveyors, geologists, aviators and transportation experts played key roles in exploratory work, in the locating and building of roads and airfields, and in the moving of freight.

It was in June, 1942, that the first flight was made across the unexplored Mackenzie-Yukon divide between Norman Wells and Whitehorse to seek a feasible route for a road and pipeline; and I had the privilege of helping to arrange that expedition and being a member of it. Twenty months later, in February 1944, after having followed every phase of the project in the field, as northern adviser and historian to the Army and the civilian constructors, I had the satisfaction of witnessing the "golden weld"—the final tie-in of the two ends of the main Canol pipeline. Not only was the pipeline itself completed, but there was an all-weather service road and telephone line accompanying it for 520 miles between Norman Wells and a point on the Alaska Highway 80 miles east of Whitehorse; there was a refinery at Whitehorse; there was a thousand-mile series of supplementary pipelines radiating from Whitehorse to the southeast, to the northwest, and to the south, besides pumping stations, tank farms, innumerable camps, hundreds of miles of access roads, a dozen airfields, and a major oilfield development. It was an extraordinary achievement.

No one should begrudge the fact that the war ended without need of petroleum from Norman Wells to repel an attack on the Alaskan mainland, or to help fuel a thrust at Japan through Alaska; various circumstances, including the atomic bomb, took care of that. But it was good insurance nevertheless, and Canol pipelines did play an important part in the wartime operation of the Alaska Highway and its airfields. Incidentally, the Norman oilfield proved capable of producing far more than the original quota of 3,000 barrels per day; it could have produced about seven times that amount if necessary. Canol was not only one of the war's most unusual construction projects, it was also one of the most enduringly beneficial.

*See "Winter Manoeuvres in Canada", by J. Tuzo Wilson, *Canadian Geographical Journal*, February 1946.

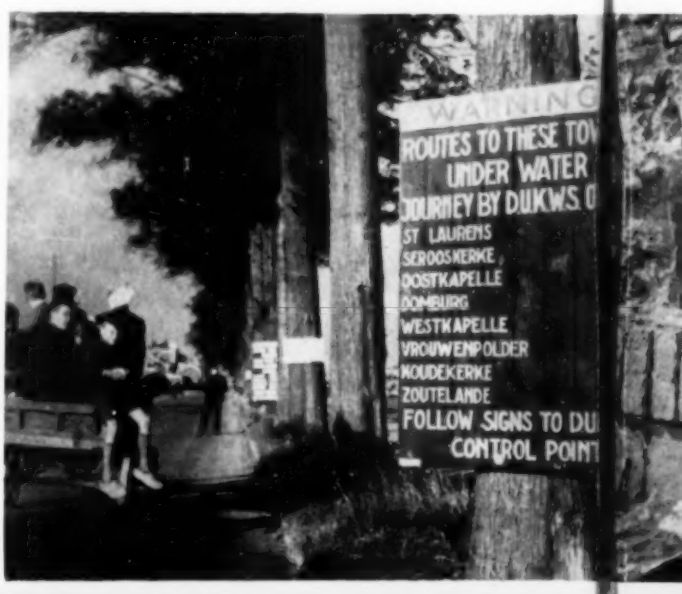
**See "Civil Engineering in Frozen Soil, U.S.S.R.", by A. I. Dementiev and V. F. Tumel, *Canadian Geographical Journal*, January 1946.

Reconstruction in the Netherlands

by EVELINE VAN BERKUM

Photos provided by The Netherlands Information Bureau

In September 1944 Allied hopes ran high for victory and it appeared that a break-through to the northern provinces could be effected at Arnhem. If that break-through had succeeded then, the reconstruction of the Netherlands would have taken far less time than it is taking now. For it was between September 1944 and May 1945 that the Germans waged their greatest ravages: they deported machinery, rolling stock, cattle and human beings alike, in countless numbers and flooded rich agricultural land, causing hunger and starvation among the people, especially in the north-western, densely populated provinces. The invaders upset the national economy with such thoroughness that entering Canadians remarked that this was the most difficult country to fight in, so complete was the disorganization. The rising hope of September was not killed during that hunger-winter of 1944-45, however, and in the liberated south as well as in the hard-pressed north, plans



At top:—An inundated road on the island of Walcheren

Right:—A self-explanatory signpost on Walcheren island

were being framed for the reconstruction of every phase of national life and participation in international affairs, whether trade, aviation, or politics. That the Dutch never gave up hope is proved by any review comparing the state of the nation now and a year ago.

Indicative of national progress is the answer of any Dutchman when asked: "Is there enough to eat?" None will answer negatively. There is not enough meat or fat to be sure, but there is no lack in quantity or variety of vegetables. Coal has been imported from the United States and Belgium, the state-owned mines in the southernmost province of Limburg are producing again, gas and electricity come from Germany's Ruhr—all of which means that a degree of normalcy and comfort has been reintroduced into the Dutch home. Of the 270,000 houses that were slightly damaged, more than two-thirds have been repaired. To replace 80,000 dwellings destroyed and 35,000 seriously damaged, hundreds of temporary housing-units have been erected. Glass is being provided by Belgium and by requisitioning the negative plates of X-rays from hospitals.

Next to housing, the greatest personal need is for clothing and shoes. The Netherlands, important pre-war textile-producer, suffer from a world shortage of raw materials and find it necessary to export the maximum, even products the people themselves are anxious to have, in order to obtain much-

At top:—Wieringermeer Polder and the remains of a once proud farm. One of the areas flooded by the Germans with water with a very low salt content from the IJsselmeer, which used to be the Zuider Zee before reclamation by Dutch engineers.

Left:—Many families in Zeeland are living in bunkers constructed by the Germans in the Atlantic wall.

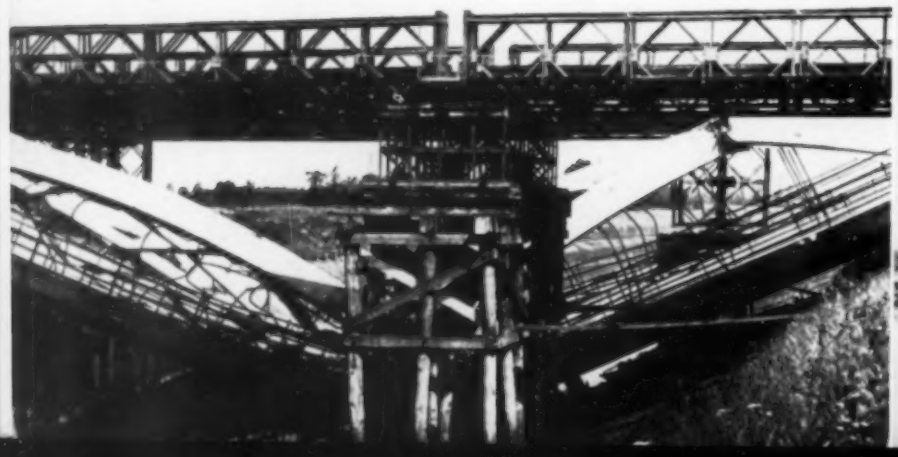
A diver of the Royal Netherlands Navy going down to investigate the extent of demolition at Java Quay in Amsterdam harbour.

needed foreign exchange. Shoe production, an important industry in the south, though not yet adequate, is on the upswing. The black-market has been virtually wiped out. All these factors combined have made for good national morale, a feeling of "Let's get the job done now", and there is little of the despondency that marks the inhabitants of many a less-damaged European country.

That a great deal of hard work has already been done may be illustrated in the fields of finance, transport, fishing, agriculture, industry and in the "purification", which is the political cleansing applied to Nazi-sympathizers by special tribunals. The enemy had left the national treasury in such disarray by printing quantities of banknotes that strong measures had to be devised. The story of Finance Minister Lieftinck's ten-guilder note—the amount of money each and every Dutchman could spend in the week of September 26, 1945—has become famous. Before this date, all banknotes had to be handed in and bank accounts were blocked. One ten-guilder banknote of the newly printed variety was given to every Netherlander for his expenses of the week following. For one week a Utopian dream of human equality was realized; then came the unblocking of bank-accounts and the return of normal note circulation. The success of the measure made itself evident in a decreased banknote circulation and an increased eagerness on the part of the people to perform useful work rather than to make easy money on the black-market. The blow to the black-market was indeed a severe one: it could now be easily determined by studying individual bankbooks whether the owner had increased his capital excessively during the war. If unable to give a satisfactory explanation of such increase to the authorities,

New temporary bridge over the Twenthe Canal alongside one of the more than 3,000 bridges destroyed during the German retreat.

Destroyed bridge ac *Rhine*



more likely than not the depositor was a black-marketeer. The net was spread for Nazi-sympathizers and black-market operators.

With the financial situation clarified, the Netherlands could take stock and think in terms of export and import trade. In order to think of moving goods, the transportation system had to be virtually rebuilt. Twenty percent of the railroad stations had been damaged, 181 bridges had been blown up or seriously damaged, 350 out of a previous 866 locomotives had disappeared to Germany to augment the shrinking amount of German rolling stock constantly subject to R.A.F. bombardment, and of 29,616 freight-cars in the Netherlands in September 1944, 25,117 had disappeared by May 1945. As soon as possible, teams were sent to Germany to recover the stolen goods. The stock they were able to recover and repair together with what has since been built has enabled the Netherlands state-owned railways on many runs to resume their pre-war service and it is again possible to travel to any part of the country.

Equally important to the waterway-wealthy country was the rehabilitation of inland shipping. Blown-up bridges meant obstructed waterways as well as disrupted overland communications. German tactical measures had effected the sinking of ships in the channels of waterways and in the ports; locks and sluices had suffered damage difficult to estimate. With Canadian help the Twenthe Canal, so important for the textile industry, was cleared of obstacles; a Netherlands mission was sent to clear the waterway of the Rhine between Duisburg and Rotterdam. Dutch enthusiasm was so great that the work, which had been estimated as requiring a month, was completed in three days. Bailey-bridges, to a total length of 30,000 feet, were thrown over Dutch rivers and canals to re-establish communications.

Greatest water problem of all was the draining of flooded land—approximately 29 per cent of the total acreage. Here, too, the fight is nearly won: in January of 1946 the last gap in the Walcheren dike was closed and the whole island, once green and prosperous, now brown and barren, celebrated the occasion with a well-deserved holiday. This phase of the reconstruction has earned the Dutch praise, not only in their own country, but also abroad, as shown by the Swiss presentation of forty barracks for two thousand men working on Walcheren.

When the Dutch took stock of their agriculture, it appeared that the situation was better than was first expected. Despite a great scarcity of farm machinery and equipment (partially replenished by Canada) the March list of the Economic Information Service presented some fifteen different

Reconstruction of the bridge across the Maas near Hedel, showing the destroyed railway bridge in the background.

Rhine at Rhenen

Left:—Pumping station "Lely", named after a Dutch engineer, owes its dry machinery to its position on top of a dike. Big pumping stations such as this were originally used in reclamation and later for draining off superfluous rain water.

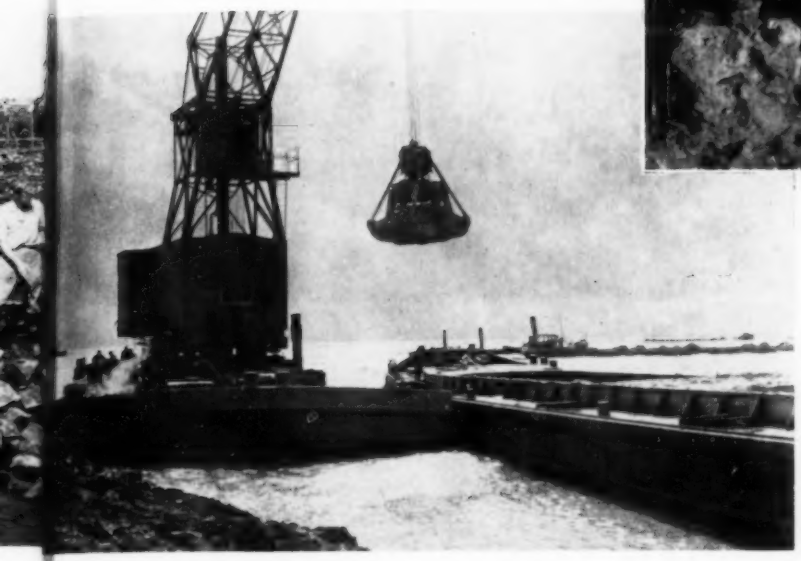
The traditional way of making dikes: first placing a layer of sand, then a layer of straw, with stones on top.

types of agricultural products for which there was a possibility of export, including flower bulbs, fresh and canned fruits, vegetables, nursery stock, dairy produce, cattle for breeding, cheese and agricultural seeds. Crops were produced last summer on most of the lands flooded with sweet water; the lands suffering from salt water inundation are being treated chemically in order to neutralize the acid effect.

The Netherlands should not be considered solely an agricultural country; indeed it is in the field of industry that the greatest progress has been made. Symbol of the giant steps taken was the great international industrial fair, held in April 1946, where Dutch and foreigners exhibited their most advanced products in all branches of industry and manufacturing. Within a year of liberation the Dutch felt confident that they could successfully launch a world-exposition, provide transportation and accommodation, and compete on an international scale with foreign industries.

Typical of Dutch reconstruction is the enormous electrical equipment plant of Philips at Eindhoven, favorite wartime target for bombers and German looters. Great amounts of equipment have been recovered and some 17,000 people are employed to produce a hundred million of the thousand million guilders' worth of products the Netherlands must export this year. Among products being exported are: seed-potatoes, gin, flax, oysters, rabbit-skins, dynamos, generators, pharmaceuticals, lacquers, paints, electric vacuum-cleaners and radios. Recently a Netherlands shipbuilding company received the order to build the largest ship yet to be owned by the Norwegians. Pioneers in long-distance aviation, the Royal Dutch Airlines, well known by its initials K.L.M., last spring inaugurated their regular air-service between Amsterdam and New

Right:—Filling the last gap in the Walcheren dike.



Cranes are used in repairing the dikes.

York, carrying several members of the Netherlands delegation for the assembly meeting of the Provisional International Civil Aviation Organization. A total wreck after the liberation, the international airport of Schiphol, outside Amsterdam, was quickly repaired and now receives aeroplanes from all points of the world. Local airlines operate within the country itself, connecting Amsterdam with the north, east and south; and a people who during the war had had no better communication facilities than the Arctic Eskimo, is eager to expand its air services and electrify the railway system. Trade, tourists and prosperity will not be long in finding the Netherlands again. From Canada have come a large loan and surplus army equipment to help the national economy to its feet again; and there is more gratitude to Canada for her share in the liberation and the reconstruction than most Canadians realize.

Arrival at Amsterdam of the first Skymaster from New York.

International Contacts Through Junior Red Cross

by JEAN E. BROWNE*

*National Director, Canadian Junior Red Cross

"THE FRONT DOOR of every little school that has Junior Red Cross is open to the wide world." So said Sir Phillip Gibbs after making a study of the international aspects of Junior Red Cross.

The writer of this article saw a remarkable demonstration of the truth of Sir Phillip Gibbs' statement in the years before World War II, while visiting Junior Red Cross branches in the schools of Czechoslovakia. The little school in Pocryvac, a primitive village in the Tatra mountains, was very remote, and the last few miles of our approach to it had to be on foot. When we finally arrived, we found a beautifully clean classroom with flowering window-boxes, a little washstand, and a corner cupboard, the shelves of which were filled with toys made by the boys, and infants' garments made by the girls. The materials for these articles were sent to the branch from the head office in Prague, and enough of the finished products were sold to pay for the materials. The rest were given away as part of the Junior Red Cross service of the school. So that even in this very poor village, members

had the privilege and happiness of helping others.

The corner cupboard contained another exhibit which proved to be the pride and joy of the pupils. It consisted of two portfolios of correspondence, one from the Junior Red Cross in the neighbouring country, Yugoslavia, and one from the United States. There were none from Canada in that particular school, but the exchange between Canada and Czechoslovakia was very prolific before the war. The pupils in this little school had made replies in kind, and because of this contact with other countries, the door of their school did indeed stand open to the wide world. Fancy the difference in outlook of these children from that of their fathers and mothers whose school door opened only on their village. Multiply this one case by hundreds of thousands of schools in Europe, in India, in Canada, or anywhere throughout the world, and try to imagine the results in the development of international friendliness in the members of the Junior Red Cross.

Not only in the schools in primitive communities but just as much in our most highly organized city secondary schools, pupils need this realistic contact with students in other countries to widen their horizons. It is good both for the "little Canadian" or colonial point of view and for an overdeveloped sense of importance—both of which are bad for a well-balanced citizenship. Canadian Juniors find that they can do some things better than their foreign correspondents, and other things not nearly so well. In any case, their outlook on their fellow beings in far-away and little known parts of the world will undergo a change, and they will get perhaps their first inkling of those things that the whole human race has in common.

The Junior Red Cross has a well worked out plan of international correspondence. Consignment sheets in quadruplicate for the portfolios are issued by the Junior Red Cross Bureau of the League of Red Cross Societies (Geneva) and one of these forms is returned to the League when a pairing is made between any two countries. Junior Red Cross correspondence is carried on between groups, not between individuals. It therefore becomes a co-operative enterprise and each pupil in the class has some share in it. The portfolio is planned by the members in consultation with their teacher, so that the thing in which each pupil excels is the thing that falls to his share.

What goes into a portfolio? That is an impossible question to answer, since they are all different. There is one thing, however, common to all—a friendly letter of greeting signed by the group. After that, Juniors put into their portfolios the things they think will be of interest to their correspondents. Most Canadian portfolios give a

Top left:—Grade VI Juniors in Renfrew School, Vancouver, prepared this portfolio with great ability and care. They asked that it be sent to a branch of the Red Cross in Tasmania.

Juniors of Plains Road School, Toronto, making articles for their annual bazaar held last December. They cleared over $300, which they are using to buy food to send to the Northampton Nursery School for the Blind in England. This is the third successful bazaar the Juniors of this school have held. It is a small city school, with only about 300 pupils.

Above:—"Keep Well Club". Victoria Creche under 5's count out $14 at Red Cross Headquarters, all collected by the children.

Left:—Toronto school class Red Cross Juniors sell hot-dogs to fellow pupils to raise money for relief work; prepare the hot-dogs themselves.

fairly comprehensive picture of Canada as a whole, her history, the climate, the beauty spots, the occupations of Canadian people, and national sports. Many of them give a general idea of the customs, ideas and tastes of Canadians, how they dress, and what they eat. Nearly all of them contain snapshots of the school, of the Juniors and of their teacher.

Translation difficulties do not stop exchanges with non-English-speaking countries. During the past year, the Canadian Junior Red Cross has received over one hundred portfolios from France. During the early part of the year, all of them told the story of the occupation and liberation. Now, they are reflecting a more normal way of thinking and living. These French portfolios, when they reach the Canadian Junior Red Cross, are sent either to French-speaking branches or to high school branches where the students are studying French.

Previous to September, 1939, there was a Translation Bureau at the League of Red Cross Societies, where translations of the various languages were made before the port-

The Red Cross start early on these citizens of tomorrow.

R.C.A.F. photo

Above:—Knitting clothing for destitute babies abroad.

Right:—Three pre-school tots at Victoria Creche practice their Junior Red Cross health rules and scrub busily.

folios were transmitted to their final destination. There is hope that this Bureau will soon be set up again.

The Canadian Junior Red Cross has not yet had any exchanges with the Russian Junior Red Cross, but no doubt that will be a development in the near future. Of the 30,000,000 world members of Junior Red Cross, Russia has 3,500,000, second only to United States. It is organized in the schools in much the same way as in Canada.

Most of the occupied countries of Europe that had Junior Red Cross before the war, have now reorganized. Czechoslovakia has, perhaps, staged the most vigorous come-back and now numbers over 700,000 members. Holland, which did not have Junior Red Cross before the war, is organizing, and so this "idea whose time has come" marches on.

An experiment in the interchange of portfolios followed by an interchange of visits between groups, was worked out in 1946, between the Theodore Roosevelt High School, Wyandotte, Michigan and the Montreal High School. In May, a group of twenty high school Juniors from Wyandotte

The youngest Juniors. Victoria Street Creche.

visited their correspondents in Montreal and were billeted in their homes for one week. Included in the visit was a day in Ottawa and two days in Quebec City. Care was taken to show the visitors various phases of the educational, cultural, economic and social life of Canada. In November a return visit was made by a group of Juniors from Montreal. They spent the American Thanksgiving week-end as guests of their friends in Wyandotte. The results of this experiment have been such as to warrant further exchanges of a somewhat similar character.

The most valuable of all international contacts made through Junior Red Cross is the relief work for children in other countries. The Canadian Junior Red Cross has already spent approximately half a million dollars in milk, food, clothing, drugs, etc., for the relief of children in Great Britain, India, China, Russia, Greece, Poland, Yugoslavia, Holland, France, Norway and Czechoslovakia. Early in the war, the Canadian Junior Red Cross undertook to support fifteen war nurseries in England on which over a period of five years, the sum of $144,753 was spent. In addition, clothing was made by members to supply all the children in the nurseries with complete outfits twice a year.

It is easy to imagine the emotion in the heart of a starving child in, say India, when he is given milk from a can that bears the label of the Canadian Junior Red Cross, but the effect on Canadian Juniors who energetically earn the money for their service activities is also profound. It is giving them an enlarged sense of responsibility that possibly no other motive could have elicited. At the present moment, members in senior high schools are thinking very seriously of world affairs, and they feel real satisfaction when they can throw themselves wholeheartedly into schemes for practical relief of suffering children in other parts of the world.

A unique instance of international contacts is the case of Rampersad Jaggernauth, a seventeen-year-old boy from Trinidad, who was brought to a hospital in Montreal to be treated for a deformed and completely useless right leg, the result of poliomyelitis as a very young child. All Rampersad's expenses are being paid by the Junior Red Cross of the Province of Quebec.

Two years ago, Junior Red Cross was first organized in Trinidad by Mrs. V. B. Walls, whose husband is Principal of Naparima College. Being a Canadian, it was natural that when Mrs. Walls came in contact with Rampersad as a member of the Junior Red Cross in Naparima, she should ask for assistance for him from the Canadian Junior Red Cross, which has cared for over 26,000 such cases in Canada.

Rampersad has had three operations—on his knee, his foot and ankle, and his hip. His doctor expects that he will be able to return to Trinidad on his own two feet, without benefit of crutches, early in the New Year.

Perhaps the happiest ending for this article would be a quotation from an editorial that appeared in a Canadian daily newspaper:

> "In too many countries children are deliberately imbued with prejudices against other nations. Hopes for civil and world peace are thus blighted. The sowing of hatred in young minds cannot be justified by any aim, but, while deploring such procedure, too few people pay attention to the fact that there is one really logical international activity carried on at this direly critical time. The Red Cross Juniors are the human agents in this legitimate modern diplomacy."

A boy of Roden School makes cribbage boards in the Manual Training Centre which will be distributed through the Junior Red Cross, to wounded ex-service men in military and D.V.A. hospitals.

Above:—A little French boy receives his can of powdered milk, a gift from Canadian Juniors.
At top:—This little boy from the Netherlands is pouring himself a spoonful of cod-liver oil sent to Holland by the Canadian Junior Red Cross.
Right, top to bottom:—
Apparently these members of the French Junior Red Cross are enjoying their share of the Canadian Junior gift to French children of $35,000 worth of milk.
Three "originals" at Sandy Knoll Nursery, England. These children went to this nursery as babies in 1942. For the last five years all the clothing used for the children in this nursery has been supplied by Canadian Juniors.
The Queen chats with a little patient at the Victoria Home for Invalid Children, Margate, England. This tot is wearing an outfit made by Canadian Juniors. The packing case on which she stands is one of many filled with clothing made by Juniors and sent to England.

Above:—Menura superba scratching for worms and insects, creating the mound on which he will later display. Watching him is a yellow robin (right centre).

Left:—Lyrebird's nest at the foot of a giant eucalypt in Sherbrooke forest.

The Lyrebird

by RON YOUNGER

Photos by Cliff Bottomley

SINCE THE FIRST pioneers settled in Australia's bushland, the lyrebird or *Menura* has been a centre of interest, both because of its unrivalled powers of mimicry and the striking display made by the cock.

When the birds were first seen by settlers at the end of the eighteenth century, they were called "Birds of Paradise of New South Wales". About 1830 the name "lyrebird"—because of the resemblance of the tail to an ancient lyre—was introduced.

The habitat of the lyrebird has been greatly reduced as much of the territory where the birds formerly ranged has been settled. *Menura superba* (the common species) and *Menura victoriae* were once found from the McPherson Range on the Queensland—New South Wales border down through the rugged mountain country of southeastern Australia to the Plenty Ranges in Victoria. *Menura alberti* had a more northerly range, from the Upper Mary River in Queensland to the Clarence River in northern New South Wales, in jungle country.

Slaty-brown in colour, the lyrebird is about the size of a pheasant; it lives to a maximum age of twenty years. Long legs and stout toes give lyrebirds a superficial resemblance to game birds, but structurally they are closely related to perching birds.

The female has a long plain tail, but in the male *Menura superba* the central tail feathers have long lateral filaments. There are sixteen tail feathers in all—twelve filamentary feathers, two lyrate feathers and two "tapes". The filamentary feathers are normally carried folded and appear drab, but during display they are fanned forward over the bird and shine glistening white, surmounted by the two dark "tape" feathers. The outer pair of tail feathers, the lyrates, show triangular markings and reach a maximum length of about 27 inches.

The beautiful treefern gullies of Sherbrooke forest, on the hills thirty miles east

At top:—On a mound in the scrub, the male lyrebird utters his distinctive call before beginning to display. The barred feather is one of the pair of lyrates which form the "lyre" outline when erected.

of Melbourne (Victoria), shelter a number of lyrebirds which have become so accustomed to visitors that they have now lost their natural timidity and are quite friendly. Observers spend much time watching them. In one eight hundred acre patch particularly favoured by the lyrebird, twenty-five pairs of nesting birds have been counted. During the breeding season, each pair of birds confines itself to a set area of the forest and does not travel beyond these self-imposed limits.

In the light eucalypt forest country, with its characteristic under-scrub and ferns, the lyrebirds may be seen as they scratch for their food--mainly earthworms and insects—and display themselves on the small open mounds which they thus create.

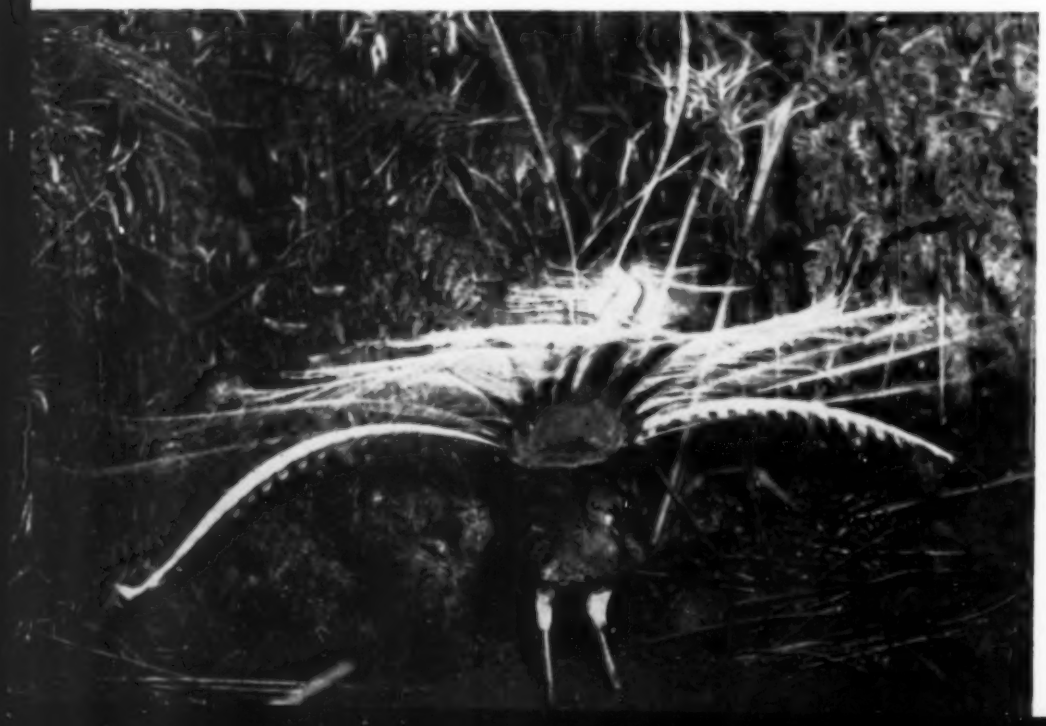
The nesting site is usually chosen by the end of April (late autumn). In some cases a platform is built but usually the nest is on or near the ground. Nests have been observed 80 feet from the ground, but this is most unusual as the lyrebird has lost its power of flight and can only sweep forward from one tree limb to another. The nest is cosily lined with grey body feathers, plucked by the hen from her plumage. There is a lapse of two or three weeks between the time the nest is finished and the laying of a single purple-blotched egg. Incubation takes some seven weeks, during which time the female may be off the nest feeding for five or eight hours a day, allowing the egg to become quite cold. The young bird is fed in the nest for about six weeks.

When the fledglings are reared and have left the nest (which is from November onwards), the birds collect in family parties and range through the forest to favourite feeding grounds irrespective of "territorial rights".

By Christmastime the young cocks commence to strut a bit, displaying their new tails, singing lustily and continuously, coached by the mature males both in the arts of showmanship and singing. At this time (in the warmth of mid-summer) the hens too contribute to the general chorus.

The lyrebird has many widely-varied natural calls and in addition it mimics a number of other birds. It is generally acknowledged to be the finest song bird of Australia, all its notes having a liquid and melodious quality.

Autumn kindles the nesting instincts, and about March mature birds begin to take up their territories again. It is during the breeding season that the sweet, deep notes of the lyrebird may lead the fortunate observer to a brilliant display as the cock struts and prances on the mound he has scratched up, his tail spread over him in a shimmering, gossamer fan.



Singing and displayin the lyrebird struts o his mound with ta arched. During displa the tail feathers quiv as the bird gives charac teristic calls and mim ics bushland sounds.

EDITOR'S NOTE-BOOK

Jim Wright, a Fellow of the Canadian Geographical Society, lives near Landis, Saskatchewan, in the centre of a wheat farming and co-operative enterprise area. Saskatchewan correspondent for the *New Republic* and the U.M.W.A. daily newspaper *The Gazette* of Glace Bay, Nova Scotia, Mr. Wright, like a number of creative writers, has worked in a variety of jobs. These include newspaper reporting for the *Saskatoon Star-Phoenix*, radio script writing and broadcasting and research work for documentary films. A licensed stationary steam engineer, he took a turn as stoker in a coal-burning freighter during World War II. Mr. Wright is active in the United Farmers of Canada, Saskatchewan Section. His book *Slava Bohu*, about the Dukhobors, won the Governor-General's Award for non-fiction in 1940, and in 1942 he wrote *All Clear, Canada!* for the Canadian Legion Educational Services.

* * *

Richard Finnie, F.C.G.S., is a native of the Yukon who, as writer, lecturer and filmmaker, has specialized in Arctic research and exploration for more than twenty years. He was associated for a year with Dr. Vilhjalmur Stefansson in studies that led indirectly to the United States War Department's decision to undertake the Canol Project, and he then became northern consultant and historian to the United States Army Engineers on the construction of that project and the Alaska Highway. He helped organize and was a member of the first aerial expedition across the Mackenzie-Yukon divide in search of a pipeline route. Mr. Finnie, whose articles are known to our readers, contributes to many magazines and has published a number of books, including *Lure of the North*, *Canada Moves North* and *Canol* (1945).

* * *

Eveline E. van Berkum, who writes of the Netherlands, was born on the island of Walcheren in the mediaeval fortress town of Middelburg. After coming to Canada in 1931, Miss van Berkum studied languages at the University of Toronto, graduating with honours. Since that time her work has covered censorship, film work, broadcasting and journalism. At present Miss van Berkum is Dutch news editor with the Netherlands and Netherlands Indies News Agency in New York.

* * *

Jean E. Browne was born in Parkhill, Ontario, and educated in Canada, with postgraduate work at King's College, London University, England. She is a trained and certified teacher and a trained and certified nurse. For the past twenty-five years, as National Director of the Canadian Junior Red Cross, Miss Browne has played a

(*Continued on page X*)

(*Continued from page IX*)

notable part in the establishment and guidance of a movement which now enrolls some 30,000,000 young people throughout the world. She founded and edits *The Canadian Red Cross Junior*, one of the most valuable publications issued by the Red Cross. Miss Browne has travelled on Red Cross missions through most of the countries of Europe. In 1929 she represented her organization at an international meeting at Geneva and in 1930 she addressed the British Empire Red Cross conference in London. For "Outstanding Service" she was awarded the Florence Nightingale Medal of 1939 by the International Red Cross Committee at Geneva.

* * *

AMONGST THE NEW BOOKS

The Seven Cities of Gold,
by VIRGINIA HERSCH
(Collins, Toronto, $2.75)

A LIVELY and interesting historical novel written around Coronado's expedition, 1540-1542, from Mexico to what is now the southwest part of the United States. At that time, with memories of the conquests of Mexico and the Empire of the Incas fresh in mind, the rumour brought by an exploring priest of seven great cities literally paved with gold, threw Mexico City into a frenzy. Dreams of emulating Cortez and Pisarro and sharing in fabulous loot drove every footloose soldier and shabby cavalier into an expedition that was organized under vice-regal authority for the conquest of Cibola. Sadly enough, the seven golden cities turned out to be seven Indian villages of the Zuni or Hopi tribes without even a grain of gold, and, after two years, the grand expedition limped back to Mexico broken and decimated.

So much for the historical background which, in truth, is most of the story. The hero, spurred by an avaricious sweetheart, takes part in the expedition and returns in rags to be scorned by his lady in favour of an aged and wealthy suitor. However, this valiant man of Spain, providently, has a second string to his bow and finds his true love in the daughter of a soldier who has accompanied the expedition. The theme is both slight and trite and the merit of the book lies in its racy account of an all but forgotten fragment of American history. P.E.P.

* * *

Congo
by JOHN LATOUCHE with Photographs by
ANDRÉ CAUVIN
(Collins, Toronto, $4.50)

Around the turn of the century, the Congo used to be presented as the horrible example of the evils of "Imperialism" and the exploitation of native races. Apparently, however, modern Belgium has been so successful in her later policies that the Congo is now cited as the colony which has shown the greatest aptitude for handling her natives and introducing to them the complexities of a modern industrialized civilization. Whether or not this has made them happier, it certainly seems to have improved their health and standards of living and has shown that the native African, with a minimum of training, is quite as competent as his white brother to handle complicated machinery and processes and to take his place in a machine age. The authors, for the excellence of the photographs is such that they are as much a part of the book as the text, spent a few casual months in the Congo, where they were given every facility for seeing the country and studying the natives, both in cities and mining camps in their tribal villages. It is their impression, and it seems a very genuine one, that in the Congo there is the making of a new state in the world where white and black are rated only in accordance with their abilities without colour bar or racial handicaps. In this transformation, the best of the old culture is being preserved and the native retains his selfrespect and faith in himself and his race.

An interesting and stimulating book with illustrations of surpassing excellence. P.E.P.

* * *

A House in Bali
by COLIN MCPHEE
(Longmans, Green & Company, Toronto, $5)

THIS is the story of the fulfilment of a dream, one that can never be enacted again, for even in the romantic island of Bali the changes wrought by the war years will be intensified by the creation of the United States of Indonesia, and the vanishing of much that was precious and irreplaceable in the older civilization. The fortunate dreamer was Colin McPhee, who was born in Montreal, but received his musical education in the United States and Paris. Hearing by chance some records from Java and Bali, he became possessed by a desire to search for their source. "The clear metallic sounds of the music were like the stirring of a thousand bells, delicate, confused, with a sensuous charm, a mystery that was quite overpowering. Who were the musicians, I wondered, and how had this music come about?" So, in 1931, he set out for Bali on a six months' holiday to hear and study this enchanting music for himself. He stayed for five years, twice returning to America, and visiting other countries of the Orient to compare their puppet theatres, shadow-plays and dancers with those he was studying.

To a musician Bali was an incredible paradise of exotic music and dance, loved by all and playing a most important part in the life of the people. Day and night he found the air vibrant with the golden metallic sounds of the *gamelan*, the Balinese orchestra of gongs, bronze-keyed instruments and drums, as it played for temple rites and village feasts. It is an enchanting experience

to accompany the author on his visits to the shadow-plays, or dancers' rehearsals, to hear his conversations with the leaders, gaining new knowledge all the time of the secrets of the marvellous music he travelled so far to seek.

Anything more foreign to our western life could hardly be conceived than that revealed by Mr. McPhee in this lively account (illustrated with his own photographs) of his happy years among a friendly and mysterious people. His insatiable curiosity about their music, his humorous understanding of their idiosyncrasies seem to have won him warm friendship among all classes and castes (for their civilization is Hindu in its origin).

The building of his House in Bali is a saga in itself. As he says:—"In the tropics it is the plants that live intensely, thrusting up and flowering overnight, while the work of man proceeds so slowly as to be at times imperceptible. It was thus with my house. I gave up hope of ever seeing it finished as I watched the coolies work for five days and stop for ten. Once they were away for a month to prepare for the cremation of Gusti Lusuh's grandfather. Back they came to work for ten days, only to stop for another month, for the week of *galungas* was near, the time when the gods came down to earth. In the daytime strolling actors would travel from village to village to perform from morning to dusk. At night there would be shadow plays, *arja* (operetta) no one could possibly think of work."

When the house was finally ready, the ceremony of consecration must be performed. His devoted friends and servants urged a three-day feast with music, *lelong* dancers from Saba, the Arja company from Buluan, fireworks and so on, all to the end that their beloved *tuan* (Master) might make a suitable impression on the villages round about and, incidentally, provide them with the fun and lavish entertainment that their hearts delighted in.

The author must surely be remembered fondly in Bali to this day, although he came back to America in 1939. For did he not revive many temple and village *gamelans*, provide training in music and dancing for gifted boys like the temperamental Sampih, study intensively their beloved music, so that he could reveal its unique beauty to the world, and, above all, make friends of high and low, learned and simple among the people? His was a unique adventure and Mr. McPhee has the unusual gift of translating his musical experience into words that yet in some magical way "leave the music still hanging in the air to echo in the reader's ears".

Those interested in music will be glad to hear that three of the author's transcriptions for two pianos of Balinese Gamelan music have been published by G. Schirmer of New York. Under the title of Balinese Ceremonial Music, the same firm has recorded an album of these transcriptions, which includes music from the shadow play, arja flute melodies and the ceremonial music which opens a temple feast. A second album which will include music from the Gamelan of Semar, the Love God, and music played during the death rites is being planned.

F. E. Forsey

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● Again the Red Cross stands at the cross-roads. Looking back, we see the record of a monumental work done during the war years; of thousands of lives saved by the Red Cross Blood Donor Service; of comfort, happiness and relief from pain brought to thousands of service men and civilians; of the spontaneous support of this great work by Canadians everywhere.

And since war ended Red Cross has made an immense contribution to the relief of war-stricken people throughout the world. Into this work have been poured immense effort and all available resources. In doing this Red Cross feels it has kept faith with Canadians, since the funds contributed for war purposes have all been spent or are now being spent in helping to heal war's wounds.

Looking forward, there are a number of clear-cut problems which have to be tackled now:

1. A Civilian Blood Transfusion Service is being established from coast to coast by the Canadian Red Cross. Soon, we hope, any hospital patient in need of a transfusion will receive one free of charge.
2. Everyone owes a great debt to the sick and disabled returned men who still remain under medical care. Red Cross lodges have been erected, or are now being built, adjoining veterans' hospitals, where convalescent patients may relax, enjoy happy visits with their relatives and friends.

3. A great work has to be done in building and maintaining Outpost Hospitals and Nursing Stations which save lives and bring health and security to Canada's remote frontiers.
4. The Red Cross work in helping to restore crippled children to normal health and strength must be continued and expanded.

In addition, Red Cross must be equipped to meet emergencies and disasters, and there are a score of other activities to be maintained and extended.

This is the program which the Red Cross has laid down for the immediate future. It is estimated that five million dollars will be required to carry it through. We know you will stand behind the Red Cross now as you have in the past, and give your generous support to this great work.

CANADIAN RED CROSS

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